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The 2008 survey of consumer payment choice

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No. 09-10

The 2008 Survey of Consumer Payment Choice

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

Abstract:

This paper presents the 2008 version of the Survey of Consumer Payment Choice (SCPC), a nationally representative survey developed by the Consumer Payments Research Center of the Federal Reserve Bank of Boston and implemented by the RAND Corporation with its American Life Panel. The survey fills a gap in knowledge about the role of consumers in the transformation of payments from paper to electronic by providing a broad-based assessment of U.S. consumers' adoption and use of nine payment instruments, including cash. The average consumer has 5.1 of the nine instruments, and uses 4.2 in a typical month. Consumers make 53 percent of their monthly payments with a payment card (credit, debit, and prepaid). More consumers now have debit cards than credit cards, and consumers use debit cards more often than cash, credit cards, or checks individually. Cash, checks, and other paper instruments are still popular and account for 37 percent of consumer payments. Most consumers have used newer electronic payments, such as online banking bill payment, but they only account for 10 percent of consumer payments. Security and ease of use are the characteristics of payment instruments that consumers rate as the most important.

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.bos.frb.org/economic/ppdp/index.htm>.

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The views expressed in this paper are those of the authors and the Federal Reserve Bank of Boston. They do not necessarily represent the views of the other Federal Reserve Banks, the Board of Governors of the Federal Reserve System, or the RAND Corporation.

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The original version of the *SCPC* was developed in 2003 by Marques Benton, Krista Blair, Marianne Crowe, and Scott Schuh, a team of Boston Fed staff who implemented the survey with Bank employees as part of a leadership training program. Thanks are due to the Boston Fed employees for supporting and participating in that voluntary effort. Likewise, thanks are due to the employees of the Federal Reserve System for their voluntary participation in the 2004 *Survey* implemented by the same Boston Fed team.

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 success, the Consumer Payments Research Center undertook a major redesign of the *SCPC* that was implemented with U.S. consumers in 2008. Contributors to the *SCPC* from the Consumer Payments Research Center were: Krista Becker, Margaret Carten, Charles Choi, Marianne Crowe, David DeRemer, Kevin Foster, Sergei Koulayev, Benjamin Levinger, Nasreen Quibria, Sarojini Rao, Heather Roberts, Scott Schuh (Director), Oz Shy, Joanna Stavins, Caroline Theoharides, Michael A. Zabek, and Jeffery Zhang.

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Table of Contents

I. Introduction	1
II. Banking and Payment Concepts	3
III. Survey Overview	5
IV. Comparable Data	6
V. Selected Results	8
<i>Results for Adoption</i>	9
<i>Results for Use</i>	9
<i>Results for Characteristics</i>	10
VI. Conclusions	10
VII. The 2008 Survey of Consumer Payment Choice: Tables*	12
<i>Adoption of Bank Accounts and Payment Instruments</i>	12
Current Ownership of Bank Accounts and Account Access Technologies	12
Historical Ownership and Discarding of Bank Accounts and Account Access Technologies	13
Primary Bank Account Holdings, By Type of Account and Financial Institution.....	14
Current Adoption of Payment Instruments	15
Current Adoption of Payment Instruments, By Instrument Features	16
Historical Adoption and Discarding of Payment Instruments.....	17
Number of Adopted Bank Accounts and Payment Cards	18
Number of Adopted Payment Instruments,* By Type of Adopter of Bank Accounts and Payment Instruments.....	19
Experience with Bank Accounts and Payment Instruments	20
Cash Holdings and Cash Withdrawals	21
Cash Holdings, By Adoption of Bank Accounts and Payment Instruments	22
Cash Withdrawals, By Adoption of Bank Accounts and Payment Instruments.....	23
Cash Withdrawal Preferences	24
<i>Use of Payment Instruments</i>	25
Incidence of Use of Payment Instruments	25
Incidence of Transactions	26
Incidence of Use of Payment Instruments, By Type of Transaction	27
Incidence of Use of Payment Instruments, By Type of Bill Payment	28
Incidence of Use of Payment Instruments, By Type of Retail or Other Transaction	29

Use of Payment Instruments in a Typical Month, by Type of Instrument.....	30
Transactions in a Typical Month, by Type of Payment	31
Use of Payment Instruments in a Typical Month, By Type of Transaction	32
Use of Payment Instruments in a Typical Month, By Type of Bill Payment	33
Use of Payment Instruments in a Typical Month, By Type of Retail or Other Transaction .	34
Number of Payment Instruments Used in a Typical Period, By Type of Instrument and Transaction	35
Actual and Expected Changes in Use of Payment Instruments, By Period of Change.....	36
<i>Assessments of Payment Instruments</i>	37
Assessments of Characteristics of Payment Instruments	37
Assessments of Payment Instruments, By Characteristic.....	38
<i>Demographics and Financial Information</i>	40
Demographics: Gender, Age, Race, and Education, Weighted Sample	40
Income, Weighted Sample	41
Assets and Liabilities, Weighted Sample	42
Time Allocation, Weighted Sample	43
VIII. Appendices	44
<i>Appendix A: Definitions</i>	44
A.1 Definitions of Banking Concepts.....	44
A.2 Definitions of Payment Instruments.....	46
A.3 Definitions of Adoption.....	48
A.4 Definitions of Use.....	49
A.5 Definitions of Transactions	50
A.6 Definitions of Characteristics of Payment Instruments	52
A.7 Definitions of Miscellaneous Payment Practices and Concepts	53
<i>Appendix B: Survey Methodology</i>	55
Survey Instrument.....	55
Conversion of Statistics for Other Uses.....	55
American Life Panel.....	56
Item Non-response and Extreme Observations	58
Sampling Weights	60
Standard Errors.....	61
<i>Appendix C: Board of Advisors (2009)</i>	64
<i>Appendix D: References</i>	65

I. Introduction

In 2003, the Federal Reserve Bank of Boston launched the *Survey of Consumer Payment Choice (SCPC)* program to develop high-quality, timely, comprehensive, and publicly available data on consumer payment behavior. A general shortage of such data has inhibited the payments industry, researchers, and public policy makers from fully understanding the ongoing transformation of the U.S. payment system.¹ Traditional paper-based payment instruments have been giving way to new payment instruments that have emerged from innovations in information and communication technologies as well as from innovations in financial markets.

This paper presents the 2008 *SCPC*, a nationally representative survey of consumer payment behavior. The Consumer Payments Research Center (CPRC) of the Boston Fed developed the survey instrument; the 2008 version is the fourth since 2003.² The RAND Corporation administered the half-hour, Internet-based survey to a sample of U.S. consumers drawn from its American Life Panel. The 2008 *SCPC* data should help researchers learn how consumers choose among the nine payment instruments — including cash. It should also help public policy makers design policies affecting the payment system and economy. These data, which are expected to be produced annually, can be used for at least two purposes:

1. To create aggregate time-series data that can be used to characterize and analyze trends in payment markets pertaining to U.S. consumers.
2. To create a longitudinal panel of data that can be used to study consumer payment behavior and evaluate public policies pertaining to the U.S. payment system.

¹ For more details about the shortage of data, see Schreft (2006), Benton, Blair, Crowe, and Schuh (2007), and Carten, Littman, Schuh, and Stavins (2007).

² 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). The AARP took the lead in developing that version with the assistance of the CPRC. The 2008 *SCPC* was developed by the CPRC with RAND's assistance and benefitted from the 2006 development work.

The consumer-level micro data from the 2008 and 2009 *SCPC* will be released to the public in 2010.

The primary purpose of this paper is to publish and document the aggregate statistics obtained from the 2008 *SCPC* for general readership. These statistics appear in a series of detailed tables later in this paper. More detailed supporting documents, materials, and information may be obtained from the Consumer Payments Research Center at the Federal Reserve Bank of Boston, including the survey instrument, tables of standard errors, and the purpose and methodology of the *SCPC* (see Schuh 2010, forthcoming).³

A secondary purpose of this paper is to provide a very brief snapshot of the U.S. payments transformation from paper instruments to electronic and other new payment instruments. We report the most salient basic facts here, but we do not provide any economic or business interpretation of the 2008 facts. A companion paper (Foster, Schuh, and Zabek 2010, forthcoming) will provide a more in-depth, yet still non-technical, overview of the results from the 2008 *SCPC*. That paper will include economic and business interpretations of the 2008 facts in historical context with results from other surveys and data.

In 2008, U.S. consumers had more payment instruments to choose from than ever before: four types of paper instruments—cash, check, money order, and travelers checks; three types of payment cards – debit, credit, and prepaid; and two electronic instruments—online banking bill payment (OBBP) and electronic bank account deductions (EBAD) using their bank account numbers. The average consumer had 5.1 of the nine instruments in 2008, and used 4.2 instruments in a typical month. Consumers made 52.9 percent of their monthly payments with a payment card. More consumers now have debit cards than credit cards (80.2 percent versus 78.3 percent), and consumers use debit cards more often than cash, credit cards, or checks individually. However, paper instruments are still popular and account for 36.5 percent of consumer payments. Most consumers have used newer electronic payments at some point, but these only account for only 9.7 percent of consumer payments. Security and ease of use are the characteristics of payment instruments that consumers rate as most important.

³ For more information about the CPRC, see <http://www.bos.frb.org/economic/cprc/index.htm>.

Note that the 2008 *SCPC* aggregate statistics released in this paper are *preliminary and subject to revision*. At present, these statistics do not reflect the use of imputation procedures to correct for item non-response among respondents. Instead, missing values have been excluded from the calculation of certain statistics in the tables. As a result, a small number of statistics in the tables may differ from the sum of their components. Also, a very small number of extreme outlier observations have been replaced with the average values from similar consumers. Further evaluation and imputation of the data are likely, so the statistics reported in this document may be revised in the future. See **Appendix B** for more details about these issues.

II. Banking and Payment Concepts

The *SCPC* is designed to measure 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 may seem different 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, non-bank payment service providers and consultants, and merchants who accept payment from consumers) focuses on the network on which payments are settled.⁴ In contrast, the *SCPC* looks at payments from the perspective of how a consumer initiates the payment. **Appendix A** contains the definitions of concepts used in the *Survey* and the tables.

Most consumer payments involve some form of depository or **banking** institution. The 2008 *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

⁴ For example, see the latest *Federal Reserve Payment Study* Federal Reserve System (2007).

institutions are referred to as “banks” for simplicity. The 2008 *SCPC* also asks questions about numerous technologies consumers use to access their bank accounts for making payments and for other purposes. See **Appendix A.1** for definitions of banking concepts.

The central focus of the *SCPC* is on measuring consumer choices about **payment instruments**. The 2008 *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 electronic bank account deduction (EBAD).⁵

The EBAD instrument is a prime example of how the consumer perspective on payments differs from the supply-side perspective. EBAD 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 like an electronic check. Payments made by consumers using their OBBP function also are like electronic checks, except the consumer’s bank does not disclose the bank account number (or other personal information) to a third party. Yet viewed from the supply side of payments, both OBBP and EBAD consumer payments settle on the Automatic Clearing House (ACH) network and thus could be combined into one “ACH payment” instrument, as in the Federal Reserve Payment Studies (for example, Federal Reserve 2007). See **Appendix A.2** for definitions of payment instruments.

Consumers make three basic choices about payment instruments: (1) whether to get, or “adopt,” them; (2) whether or not to use them (incidence of use); and (3) how often to use them (frequency of use, or simply “use”). The 2008 *SCPC* measures consumers’ **adoption** of payment instruments, as well as various banking and other payments practices of consumers. See **Appendix A.3** for definitions of adoption. The 2008 *SCPC* also measures the **use** of payment instruments by incidence (the percentage of consumers who use them) and frequency (the

⁵ The EBAD terminology is not fully satisfactory. Strictly speaking, OBBP also is an “electronic bank account deduction.” A more accurate term for an EBAD is a “bank account number” (BAN) payment because these are payments in which consumers use their bank account numbers in a way they do not with OBBP or any other payment instrument. The BAN terminology is being used with the 2009 *SCPC*.

number of payments made by consumers).⁶ 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). See **Appendix A.4** for definitions of payment use.

Consumers use their payment instruments for various types of **transactions**. The 2008 *SCPC* asks questions about seven types of payment transactions: three types of bill payments—automatic, online, and in person/by mail; one type of non-bill online payment; two types of retail goods payments—essential and non-essential; and other non-retail 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. See **Appendix A.5** for definitions of types of transactions.

Payment instruments have **characteristics** that are important to consumers who choose among the available instruments.⁷ The 2008 *SCPC* asks respondents to rate eight types of payment instrument characteristics—acceptance for payment; acquisition and setup; control over payment timing; cost; ease of use; payment records; payment speed; and security. The survey obtains these ratings for each of six payment instruments—cash, check, debit card, credit card, prepaid card, and both types of electronic account deductions (EBAD and OBBP combined). See **Appendix A.6** for definitions of payment instrument characteristics.

III. Survey Overview

The 2008 *SCPC* was administered to a sample of U.S. consumers in the fall of 2008 (September through November) by the RAND Corporation as a module of the American Life Panel (ALP). Panelists for the ALP were recruited from the Michigan Survey of Consumers, which randomly selects U.S. consumers for voluntary participation using telephone random

⁶ Ideally, the *SCPC* also would measure use of payment instruments by the dollar value of payments, but the 2008 survey did not provide enough time to include both measures (number and dollar value). Number of payments, rather than dollar value, was chosen, 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.

⁷ For example, see the paper by Schuh and Stavins (2009).

digit dialing.⁸ The final sample size of the 2008 *SCPC* was 1,010 respondents. In 2009, the *SCPC* will include twice as many respondents. About half of the 2009 respondents will be the same as in 2008, which will make the *SCPC* longitudinal. The other half of 2009 respondents will be new. Comparison of the 2009 results for old and new respondents will offer an opportunity to measure the educational impact of the *SCPC* on consumer payment behavior.

The *SCPC* survey instrument was developed by the Consumer Payments Research Center (CPRC) and is available from the CPRC public website.⁹ It was administered online with respondents viewing it using a computer or Web TV. It took the typical respondent an average of one-half hour to complete. Survey responses were reviewed and tabulated by the CPRC in consultation with RAND. 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 *SCPC*.

IV. Comparable Data

The *SCPC* complements and supplements existing sources of payments data. The two main publicly available sources are the *Survey of Consumer Finances* (SCF) and the *Federal Reserve Payment Studies* (FRPS).¹⁰ The two main advantages of the *SCPC* over both of these alternative data sources are: (1) it is higher frequency (annual instead of tri-annual), so it will provide more timely information on payments; and (2) it contains a more comprehensive assessment of payment behavior.

Regarding payments, the SCF primarily contains information about the adoption of a small number of non-cash payment instruments and practices (checks, credit cards, debit cards, and automatic bill payments), as well as information about the use of credit cards. In contrast, the FRPS primarily contains information about the use of a wide range of non-cash payment instruments, but it does not contain much information about the adoption or acceptance of

⁸ For more information about the Michigan Survey of Consumers see <http://www.sca.isr.umich.edu/>.

⁹ See <http://www.bos.frb.org/economic/cprc/index.htm>.

¹⁰ See Bucks, Kennickell, Mach, and Moore (2009) for more information about the SCF, and Federal Reserve System (2007) or Gerdes (2008) for more information about the FRPS.

payment instruments. The *SCPC* contains information about both the adoption and use of a wider range of payment instruments, including cash. Like the *SCF*, the *SCPC* focuses on consumers, but the *SCF* surveys households while the *SCPC* surveys individual consumers.

Several key results emerge from the *SCF* data on consumer payments. First, the *SCF* measures adoption of four non-cash payment instruments—checks, credit cards, debit cards, and automatic bill payments (ABP).¹¹ According to the *SCF*, the number of payment instruments held by the average consumer increased from 1.5 (out of four) in 1989 to 2.8 in 2007. In the 2007 *SCF*, the percentage of consumers who had adopted checks (89.7 percent), credit cards (73.0 percent), and debit cards (67.0 percent) was quite similar to the 2008 *SCPC* results (see *SCPC* Table 4), except that the *SCPC* suggests that debit card adoption increased substantially even in one year (2007 to 2008). Finally, the *SCF* shows that the average U.S. household made \$889 worth of credit card charges per month in 2007, which represents 12.7 percent of average household income. The *SCF* does not include any additional information about payment use for other instruments or in terms of number of payments.

In contrast to the *SCF* and *SCPC*, the *FRPS* measures non-cash payment use for all sectors of the economy (consumers, firms, and government). The primary result emerging from the *FRPS* data is that, since 2000, the use of checks has been declining and the use of other payment instruments has been increasing. Total U.S. check use (by consumers plus business and government) declined 27.0 percent between 2000 and 2006. In contrast, total U.S. debit card use increased 204.8 percent and ACH use increased by 135.5 percent during the same period. In 2006, the *FRPS* shows that the consumer-originated share of check use was 58.0 percent. However, the *FRPS* does not provide any other details about consumer payment behavior distinct from business and government payments.

A number of private companies also provide some data on consumer payment behavior. Among others, these sources include: the American Bankers Association; Hitachi (formerly

¹¹ 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 specific accounts. Furthermore, it excludes automatic payroll deductions. The *SCPC* does include 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>.

Dove Consulting), which contributed to the FRPS; Javelin Strategy & Research; *The Ohio State University 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 clearly stated and are difficult to obtain. For these reasons, we do not report, analyze, or compare the results of these surveys to the publicly available data sources that do disclose such details. The section labeled “Conversion of Statistics for Other Uses” in Appendix B does, however, provide a suggestion for converting the statistics in this document to statistics comparable with many other data releases, including those of the Federal Reserve Payments Study.

Together, the information in these public and private data sources 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 and the CPRC welcomes partners in this endeavor. Toward that end, the CPRC developed a Board of Advisors in 2009 that includes representatives from industry, academia, and the public sector to provide input and help develop a consolidated and standardized data source. See **Appendix C** for members of the Board.

V. Selected Results

The 2008 *SCPC* provides a snapshot of U.S. consumers’ payment choices. The tables included in this paper provide an extensive set of detailed results covering most of the questions in the *SCPC*. Below is a list of highlights and salient facts. They are provided without interpretation or commentary and are organized by topic: adoption of payment instruments, use of payment instruments, and characteristics of payment instruments. For a more detailed description and analysis of the results, see Foster, Schuh, and Zabek (2010 forthcoming). Readers interested in converting these results to statistics for the entire U.S. economy should consult the section “Conversion of Statistics for Other Uses” in Appendix B.

Results for Adoption

1. U.S. consumers have more payment instruments to choose from than ever before (nine). In 2008, the average consumer had 5.1 payment instruments and used 4.2 payment instruments in a typical month. See **Tables 8 and 24** in the *2008 SCPC Tables*.
2. Consumers have widely adopted some, but not all, payment instruments. Essentially all consumers have adopted cash.¹² Checks have been adopted by 91.3 percent of consumers. A payment card has been adopted by 93.4 percent of all consumers: 80.2 percent have a debit card and 78.3 percent have a credit card, but only 17.2 percent have a prepaid card. Finally, 81.2 percent of consumers have adopted an electronic payment method. More than half of consumers (52.5 percent) have adopted online banking bill payment, and 73.4 percent of consumers have debited their bank account via an external website (this process is called an electronic bank account deduction in this survey). See **Table 4** in the *2008 SCPC Tables*.
3. The discard rate is the percentage of consumers who once owned or adopted a payment instrument but no longer have that instrument. As of 2008, 14.0 percent of consumers had discarded a credit card and 27.5 percent had discarded a prepaid card, compared with 4.9 percent of consumers who had discarded checks and 5.9 percent who had discarded debit cards. See **Table 6** in the *2008 SCPC Tables*.
4. The average adopter of credit cards has 3.5 credit cards. Per capita, consumers have 2.7 credit cards each. See **Table 7** in the *2008 SCPC Tables*.
5. The average U.S. consumer has \$79 of cash on his or her person and the median consumer has \$30. The average consumer also has \$157 of cash on his or her property (home, car, or office) and the median consumer has \$14. The average U.S. consumer gets cash 4.3 times per month from a variety of sources. More than half of consumers (53.6 percent) get cash most often from an ATM. See **Tables 10 and 13** in the *2008 SCPC Tables*.
6. The average age at which a U.S. consumer under the age of 35 first adopted a credit card is 20.8 years. The average age of credit card adoption for a consumer over the age of 65 is 40.6 years. See **Table 9** in the *2008 SCPC Tables*.

Results for Use

¹² See Appendix B for a further discussion of the cash adoption measure in the standard errors section.

7. The average U.S. consumer makes 76.7 payments in a typical month. Consumers use cards most often for payments. In a typical month, 52.9 percent of consumer payments are made using cards, and only 36.5 percent are made using paper instruments. The remaining payments are made electronically or directly from income. These are percentages of the number of payments, not the dollar value of payments. See **Table 19** in the *2008 SCPC Tables*.
8. More than half of all payments by U.S. consumers are retail payments. In a typical month, 65.6 percent of consumer payments are retail payments. Bill payments compose 25.8 percent of payments, and the remaining 8.6 percent are online payments. These are percentages of the number of payments, not the dollar value of payments. See **Table 20** in the *2008 SCPC Tables*.
9. More than half of U.S. consumers (51.6 percent) said that they wrote fewer checks in 2008 than they did in 2005. In contrast, during the same time period 49.5 percent of consumers reported an increase in their use of debit cards, 42.6 percent reported an increase in their use of electronic bank account deduction, and 60.6 percent reported an increase in their use of online banking bill payments. See **Table 25** in the *2008 SCPC Tables*.
10. Cash is the most widely used payment instrument for retail payments, and checks are still the most widely used for bill payments: 86.4 percent of consumers used cash to make retail payments, and 73.5 percent of consumers made bill payments using checks or money orders. Credit cards and debit cards are the second and third most widely used payment instruments for retail payments—they were used to make retail payments by 65.0 percent of consumers and 64.5 percent of consumers, respectively. Electronic bank account deduction is the second most widely used payment instrument for bill payments, with an incidence of use of 62.9 percent. See **Table 16** in the *2008 SCPC Tables*.

Results for Characteristics

11. Security and ease of use are the two most important characteristics of payment instruments to U.S. consumers: 31.6 percent of consumers said security is the most important characteristic while 28.7 percent of consumers said ease of use was the most important characteristic to them. See **Table 26** in the *2008 SCPC Tables*.

VI. Conclusions

This paper provides new estimates of U.S. consumer payment behavior in 2008 from a rigorous and comprehensive new survey named the *Survey of Consumer Payment Choice*. In 2008,

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. Beginning in 2009, the *SCPC* data will provide the opportunity to estimate the changes in consumer adoption and use of payment instruments. The Consumer Payments Research Center of the Boston Fed welcomes collaborators in development of the *SCPC* and partners in its broader research program on studying consumer payment behavior.

VII. The 2008 Survey of Consumer Payment Choice: Tables*

Adoption of Bank Accounts and Payment Instruments

Table 1

Current Ownership of Bank Accounts and Account Access Technologies

Percentage of consumers

	Percent
Bank accounts	
Bank account (checking or saving)	93.8
Checking	91.3
Saving	78.0
Checking and saving	75.5
Bank account features	
Primary checking account bears interest	49.1
Primary saving and checking accounts linked	54.5
Bank account access technologies	
ATM or debit card	84.9
ATM card	27.0
ATM card only	4.7
Debit card	80.2
Debit card only	57.9
ATM card and debit card	22.3
Telephone banking	41.3
Mobile banking	8.2
Online banking	70.7

*Estimates in all tables are preliminary and subject to revision.

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

	Ever owned	Discarded*
Bank accounts		
Bank account	97.5	3.7
Checking	96.2	4.9
Saving	95.6	17.6
Bank account access technologies		
ATM access	92.2	7.2
ATM card	58.8	31.7
Debit card	86.1	5.9
Telephone banking	48.9	7.7
Online banking	72.9	2.2

* Discarding is defined as the difference between historical and current ownership rates.

Table 3***Primary Bank Account Holdings, By Type of Account and Financial Institution***Percentage of account adopters

	Percent
Primary checking account	
Commercial bank	76.7
Savings and loan	1.4
Credit union	20.3
Other institutions	1.6
Internet bank	0.6
Not specified	1.1
Primary savings account	
Commercial bank	61.9
Savings and loan	1.5
Credit union	32.4
Other institutions	4.2
Internet bank	2.7
Not specified	1.5

Table 4***Current Adoption of Payment Instruments***Percentage of consumers

	Percent
Paper instruments	98.3
Cash	98.2
Check	91.3
Money order*	18.3
Travelers check*	4.7
Payment cards	93.4
Debit	80.2
Credit	78.3
Prepaid	17.2
Other payment instruments	81.2
Online banking bill payment	52.5
Electronic bank account deduction*	73.4

* Adoption is defined by incidence of use in a given year.

Table 5***Current Adoption of Payment Instruments, By Instrument Features***Percentage of consumers

	Percent
Debit cards	80.2
Contactless	21.7
Credit cards	78.3
Rewards	59.6
Rewards card only	24.4
No rewards	53.9
Non-rewards card only	18.7
Rewards and non-rewards	35.2
Contactless	25.7
Prepaid cards	17.2
Bought for own use	6.3
Bought for own use only	3.6
Received from others	13.6
Received from others only	11.0
Both bought and received	2.7
Contactless	4.4
Other contactless payment instruments	9.5
Electronic toll payment	9.5
Key fob	1.7
Any contactless payment instrument	44.3

Table 6***Historical Adoption and Discarding of Payment Instruments***Percentage of consumers

	Ever adopted	Discarded*
Paper instruments		
Cash	na	na
Check	96.2	4.9
Money order **	na	na
Travelers check **	na	na
Payment cards		
Debit	86.1	5.9
Credit	92.5	14.0
Prepaid	44.8	27.5
Other payment instruments		
Online banking bill payment	58.3	5.0
Electronic bank account deduction **	na	na

* Discarding is defined as the difference between historical and current adoption rates.

** Adoption is defined by incidence of use in a given year.

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

	Per adopter	Per capita
Bank accounts	2.8	2.6
Checking	1.5	1.4
Saving	1.6	1.3
ATM and debit cards	1.7	1.5
ATM	1.2	0.3
Debit	1.4	1.1
Credit Cards	3.5	2.7
Rewards	2.3	1.4
No rewards	2.5	1.3
Prepaid cards	2.4	0.4
Bought for own use	2.0	0.1
Received from others	2.1	0.3

Table 8***Number of Adopted Payment Instruments,* By Type of Adopter of Bank Accounts and Payment Instruments***

	Per capita
Actual number of payment instruments adopted	5.1
Bank account non-adopters	1.3
Bank account adopters	5.4
Checking, no savings	5.0
Savings, no checking	3.1
Checking and saving	5.5
Paper adopters	5.2
Cash	5.2
Check	5.4
Money order	5.5
Travelers check	6.7
Payment card adopters	5.4
Debit	5.6
Credit	5.6
Prepaid	6.0
Other payment instrument adopters	5.7
Online banking bill payment	6.0
Electronic bank account deduction	5.7

* The nine payment instruments are cash, check, money order, travelers checks, credit card, debit card, prepaid card, online banking bill payment, and electronic bank account deduction.

Table 9***Experience with Bank Accounts and Payment Instruments***

Years

Age of consumer at adoption

	Current Age				
	Under 35	35–44	45–54	55–64	65 and over
Bank accounts and access					
Checking account	20.0	22.4	25.5	30.3	30.8
ATM card	20.5	24.0	33.9	44.8	57.5
Telephone banking	23.0	30.6	39.6	51.0	59.6
Mobile banking	22.7	37.6	44.3	54.4	62.0
Online banking	23.0	33.4	43.6	53.4	64.2
Payment instruments and practices					
Debit card	20.8	27.8	38.0	48.0	60.8
Credit card	20.8	24.4	28.6	35.3	40.6
Prepaid card	22.8	33.1	43.3	53.4	65.8
Online banking bill payment	23.5	34.0	43.1	54.0	64.1
Automatic bill payment	23.6	33.5	42.0	51.6	60.7

Time since original adoption by consumer

Bank accounts and access					
Checking account	6.7	17.1	23.9	28.8	40.4
ATM card	6.5	15.5	15.7	14.4	13.5
Telephone banking	4.5	8.7	9.5	8.0	11.9
Mobile banking	1.9	1.5	4.9	5.4	5.0
Online banking	3.6	6.1	5.8	5.5	6.8
Payment instruments and practices					
Debit card	5.5	11.6	11.2	10.9	10.3
Credit card	6.2	15.2	20.8	23.8	30.7
Prepaid card	4.3	6.2	5.9	5.1	5.4
Online banking bill payment	3.1	5.4	6.0	5.3	6.8
Automatic bill payment	4.1	6.0	7.3	7.5	10.3

Table 10***Cash Holdings and Cash Withdrawals***Dollars, except as noted

	Mean	Median
Cash Holdings, per capita	230	70
On person	79	30
On property	157	14
Cash Withdrawals, per month*	336	180
Typical amount per withdrawal*	102	50
Withdrawals (<i>number</i>)	4.3	3.0
Prepaid Card Reloadings		
Reloads (<i>number per month, adopters</i>)	1.1	0.0

* The 2008 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 per month will differ from the actual amount that the consumer gets per month.

Table 11***Cash Holdings, By Adoption of Bank Accounts and Payment Instruments***

Dollars per capita

	Adopters		Non-adopters	
	Mean	Median	Mean	Median
Bank account				
Total	230	73	238	55
On person	77	30	116	15
On property	158	20	136	0
ATM or debit card				
Total	215	60	316	115
On person	68	25	141	55
On property	152	10	186	50
Credit card				
Total	252	80	153	40
On person	81	30	73	18
On property	177	20	84	0
Prepaid card				
Total	212	84	234	66
On person	64	30	82	25
On property	154	40	158	10
Money order				
Total	241	70	225	75
On person	124	30	69	25
On property	124	20	161	10

Table 12**Cash Withdrawals, By Adoption of Bank Accounts and Payment Instruments**

Dollars per month, except as noted

	Adopters		Non-adopters	
	Mean	Median	Mean	Median
Bank account				
Total per month*	328	200	446	174
Amount per withdrawal*	99	50	146	30
Withdrawals (<i>number per month</i>)	4.3	3.0	3.6	2.0
ATM or debit card				
Total per month*	313	174	462	200
Amount per withdrawal*	92	50	156	100
Withdrawals (<i>number per month</i>)	4.3	4.0	4.3	2.0
Credit card				
Total per month*	332	200	349	174
Amount per withdrawal*	97	60	120	40
Withdrawals (<i>number per month</i>)	4.3	3.0	4.0	4.0
Prepaid card				
Total per month*	309	200	341	174
Amount per withdrawal*	107	60	101	50
Withdrawals (<i>number per month</i>)	3.9	3.0	4.3	3.0
Money order				
Total per month*	385	231	325	174
Amount per withdrawal*	120	50	98	50
Withdrawals (<i>number per month</i>)	4.6	4.0	4.2	3.0

* The 2008 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 per month will differ from the actual amount that the consumer gets per month.

Table 13***Cash Withdrawal Preferences***Percentage of consumers

	First choice	Second choice	Third choice
Cash withdrawal methods			
ATM or debit card	60.5	34.0	21.5
Withdrawal from ATM	53.5	13.5	7.4
Cash back from store	7.0	20.5	14.2
Account withdrawal	11.4	29.3	18.2
Personal check cashing	6.9	13.4	16.2
Paycheck cashing	10.0	6.2	9.7
Payment in cash by employer	1.6	0.5	1.2
Other	3.0	5.1	8.7
Cash withdrawal location or source			
ATM	53.5	13.5	7.4
Bank teller	22.6	43.7	37.2
Check cashing store	1.8	1.9	1.2
Retail or grocery store	9.0	24.2	16.9
Employer	5.3	2.0	5.4
Family	2.7	4.5	8.0
Other	0.3	0.7	0.7

Use of Payment Instruments

Table 14

Incidence of Use of Payment Instruments

Percentage of consumers

	Monthly	Annual
Paper instruments	95.1	96.3
Cash	86.5	88.9
Check or money order	83.0	87.5
Travelers check	0.5	4.7
Payment cards	89.2	90.2
Debit	67.0	69.0
Credit	68.9	72.8
Prepaid	5.9	8.7
<i>Prepaid card reloading</i>		
All consumers	na	5.3
Prepaid card adopters only	na	31.0
Other payment instruments	73.9	76.3
Online banking bill payment	33.7	35.5
Electronic bank account deduction	70.6	73.4
Direct deduction from income	18.6	19.4

Table 15***Incidence of Transactions***Percentage of consumers

	Monthly	Annual
Bill payments	95.5	95.7
Automatic bill payment	56.7	57.2
Online bill payment	65.5	70.2
By mail or in person payment	82.3	88.5
Online payments, excluding bills	61.1	78.6
Retail and other payments	96.3	96.3
Retail		
Essential	94.4	94.6
Non-essential	83.5	91.8
Other	81.9	89.5

Table 16***Incidence of Use of Payment Instruments, By Type of Transaction***

Percentage of consumers

	Bill payments	Online payments	Retail and other payments
<i>Monthly incidence</i>			
Paper instruments	78.0	32.2	90.6
Cash	22.3	na	86.4
Check or money order	73.5	32.2	60.9
Travelers check	na	na	na
Payment cards	72.7	47.7	88.1
Debit	58.1	30.1	64.5
Credit	57.6	30.8	65.0
Prepaid	2.2	2.5	5.4
Other payment instruments	70.8	35.0	na
Online banking bill payment	33.7	na	na
Electronic bank account deduction	62.9	35.0	na
Direct deduction from income	18.6	na	na
<i>Annual incidence</i>			
Paper instruments	85.8	38.9	93.3
Cash	25.8	na	89.1
Check or money order	81.8	38.9	69.8
Travelers check	na	na	na
Payment cards	75.7	65.2	89.1
Debit	61.2	39.5	66.6
Credit	62.8	46.4	69.9
Prepaid	2.7	3.4	8.1
Other payment instruments	73.6	42.5	na
Online banking bill payment	35.5	na	na
Electronic bank account deduction	65.6	42.5	na
Direct deduction from income	19.4	na	na

Table 17***Incidence of Use of Payment Instruments, By Type of Bill Payment***

Percentage of consumers

<i>Monthly incidence</i>	Automatic	Online	By mail or in person
Any instrument	56.7	65.5	82.3
Paper instruments	na	na	78.0
Cash	na	na	22.3
Check or money order	na	na	73.5
Travelers check	na	na	na
Payment cards	38.3	43.3	38.5
Debit	21.4	30.8	27.3
Credit	27.9	22.1	20.5
Prepaid	na	na	2.2
Other payment instruments	53.1	55.4	na
Online banking bill payment	na	33.7	na
Electronic bank account deduction	na	70.6	na
Direct deduction from income	18.6	na	na
Addendum:			
Payment made on a company web site	na	57.1	na
<i>Annual incidence</i>			
Any instrument	57.2	70.2	88.5
Paper instruments	na	na	85.6
Cash	na	na	25.8
Check or money order	na	na	81.8
Travelers check	na	na	na
Payment cards	40.7	48.7	43.6
Debit	22.8	34.7	29.4
Credit	30.9	28.0	25.9
Prepaid	na	na	2.7
Other payment instruments	53.7	60.1	na
Online banking bill payment	na	35.5	na
Electronic bank account deduction	na	73.4	na
Direct deduction from income	19.4	na	na
Addendum:			
Payment made on a company web site	na	64.1	na

Table 18***Incidence of Use of Payment Instruments, By Type of Retail or Other Transaction***

Percentage of consumers

<i>Monthly incidence</i>	Retail		Other payments
	Essential	Non-essential	
Any instrument	94.4	83.5	81.9
Paper instruments	84.5	64.6	72.0
Cash	81.3	60.7	58.9
Check or money order	35.4	32.6	45.3
Travelers check	na	na	na
Payment cards	85.0	73.6	63.2
Debit	62.6	52.0	42.5
Credit	57.9	51.3	44.8
Prepaid	5.0	2.3	2.5
Electronic payments	na	na	na
Online banking bill payment	na	na	na
Electronic bank account deduction	na	na	na
<i>Annual incidence</i>			
Any instrument	94.6	91.8	89.5
Paper instruments	87.5	73.1	81.9
Cash	84.4	68.0	67.3
Check or money order	42.5	41.0	57.8
Travelers check	na	na	na
Payment cards	86.5	83.2	73.1
Debit	65.0	58.7	50.2
Credit	64.0	63.3	55.7
Prepaid	7.8	4.6	3.7
Electronic payments	na	na	na
Online banking bill payment	na	na	na
Electronic bank account deduction	na	na	na

Table 19***Use of Payment Instruments in a Typical Month, by Type of Instrument***

	Percent Share	Number per capita	
		Mean	Median
Total payments	100.0	76.7	59.1
Paper instruments	36.5	28.1	19.3
Cash	22.7	17.6	9.8
Check or money order	13.7	10.6	5.7
Travelers check	0.0	0.0	0.0
Payment cards	52.9	40.3	27.3
Debit	31.0	23.9	10.0
Credit	21.3	16.4	5.0
Prepaid	0.6	0.4	0.0
Other payment instruments	9.7	7.4	4.0
Online banking bill payment	2.7	2.2	0.0
Electronic bank account deduction	7.0	5.3	2.0
Direct deduction from income	1.0	0.8	0.0

Table 20***Transactions in a Typical Month, by Type of Payment***

	Percent	Number per capita	
	Share	Mean	Median
Total	100.0	76.7	59.1
Bill payments	25.8	19.6	12.0
Automatic	6.7	5.1	1.0
Online	8.4	6.4	2.0
By mail or in person	9.7	7.4	4.0
Direct deduction from income	1.0	0.8	0.0
Online payments, excluding bills	8.6	6.6	2.0
Retail and other payments	65.6	50.0	35.0
Retail	51.5	39.3	27.4
Essential	35.5	27.0	19.4
Non-essential	16.0	12.2	5.3
Other	14.1	10.8	6.0

Table 21***Use of Payment Instruments in a Typical Month, By Type of Transaction***

Number of transactions per capita

	Bill payments	Online payments	Retail and other payments
Paper instruments	5.1	1.6	21.6
Cash	1.2	na	16.6
Check or money order	4.1	1.6	5.1
Travelers check	na	na	na
Payment cards	7.9	3.7	28.8
Debit	4.6	2.1	17.5
Credit	3.6	1.6	11.4
Prepaid	0.0	0.1	0.3
Other payment instruments	6.0	1.4	na
Online banking bill payment	2.2	na	na
Electronic bank account deduction	4.0	1.4	na
Direct deduction from income	0.8	na	na
<i>Share (percentage of transactions)</i>			
Paper instruments	6.5	2.0	27.9
Cash	1.4	na	21.4
Check or money order	5.2	2.0	6.5
Travelers check	na	na	na
Payment cards	10.3	4.9	37.7
Debit	5.7	2.7	22.6
Credit	4.6	2.1	14.7
Prepaid	0.0	0.1	0.5
Other payment instruments	8.0	1.7	na
Online banking bill payment	2.7	na	na
Electronic bank account deduction	5.2	1.7	na
Direct deduction from income	1.0	na	na

Table 22

Use of Payment Instruments in a Typical Month, By Type of Bill Payment

Number of transactions per capita

	Automatic	Online	By mail or in person
Paper instruments	na	na	5.1
Cash	na	na	1.2
Check or money order	na	na	4.1
Travelers check	na	na	na
Payment cards	2.9	2.7	2.4
Debit	1.6	1.7	1.4
Credit	1.4	1.1	1.2
Prepaid	na	na	0.0
Other payment instruments	2.3	3.8	na
Online banking bill payment	na	2.2	na
Electronic bank account deduction	2.3	1.8	na
Direct deduction from income	0.8	na	na
Addendum:			
Payment made on a company web site	na	4.4	na
<i>Share (percentage of transactions)</i>			
Paper instruments	na	na	6.5
Cash	na	na	1.4
Check or money order	na	na	5.2
Travelers check	na	na	na
Payment cards	3.7	3.4	3.2
Debit	2.0	2.0	1.7
Credit	1.7	1.4	1.5
Prepaid	na	na	0.0
Other payment instruments	3.0	5.0	na
Online banking bill payment	na	2.7	na
Electronic bank account deduction	3.0	2.3	na
Direct deduction from income	1.0	na	na
Addendum:			
Payment made on a company web site	na	5.7	na

Table 23***Use of Payment Instruments in a Typical Month, By Type of Retail or Other Transaction***

Number of transactions per capita

	Retail		Other payments
	Essential	Non-essential	
Paper instruments	11.3	5.4	5.2
Cash	9.4	4.1	3.4
Check or money order	1.9	1.3	2.0
Travelers check	na	na	na
Payment cards	16.1	7.0	5.7
Debit	10.2	4.3	3.3
Credit	6.3	2.8	2.5
Prepaid	0.2	0.1	0.1
Other payment instruments	na	na	na
Online banking bill payment	na	na	na
Electronic bank account deduction	na	na	na
<i>Share (percentage of transactions)</i>			
Paper instruments	14.3	6.9	6.7
Cash	11.9	5.2	4.2
Check or money order	2.4	1.7	2.4
Travelers check	na	na	na
Payment cards	21.1	9.2	7.4
Debit	12.9	5.5	4.1
Credit	8.0	3.6	3.2
Prepaid	0.2	0.1	0.1
Other payment instruments	na	na	na
Online banking bill payment	na	na	na
Electronic bank account deduction	na	na	na

Table 24

Number of Payment Instruments Used in a Typical Period, By Type of Instrument and Transaction
Per capita

	Transaction Type			
	All payments	Bill payments	Online payments	Retail and other payments
Typical Month				
Maximum number of payment instruments	9	8	5	6
All instruments	4.2	3.1	1.2	2.8
Paper instruments	1.8	1.0	0.3	1.5
Payment cards	1.4	1.1	0.6	1.3
Other payment instruments	1.0	0.9	0.3	na
Typical Year				
Maximum number of payment instruments	9	8	5	6
All instruments	4.5	3.4	1.6	3.1
Paper instruments	2.0	1.2	0.4	1.7
Payment cards	1.5	1.2	0.9	1.4
Other payment instruments	1.1	1.0	0.4	na

Table 25**Actual and Expected Changes in Use of Payment Instruments, By Period of Change**

Percentage of consumers

	Decreased a lot	Decreased somewhat	About the same	Increased somewhat	Increased a lot
One-Year Changes					
Actual (2007–2008)					
Cash	13.7	14.8	62.9	7.3	1.2
Checks	11.7	22.8	60.7	3.4	1.4
Debit cards	5.8	2.1	53.8	28.4	9.8
Credit cards	14.6	13.2	48.2	19.1	4.9
Prepaid cards	31.2	6.2	55.6	6.2	0.8
Electronic account deduction	7.8	2.5	62.6	23.9	3.1
Online bill payments	2.4	0.7	53.7	27.1	16.0
Expected (2008–2009)					
Cash	6.1	10.7	73.0	7.7	2.4
Checks	9.1	14.3	71.0	4.0	1.7
Debit cards	5.6	2.9	63.4	22.6	5.6
Credit cards	13.8	15.0	60.8	7.4	3.0
Prepaid cards	25.7	5.1	65.4	3.1	0.7
Electronic account deduction	3.9	3.7	71.4	13.9	7.2
Online bill payments	1.7	1.9	62.6	20.4	13.4
Three-Year Changes					
Actual (2005–2008)					
Cash	22.5	20.5	41.0	7.2	8.8
Checks	31.1	20.5	40.1	7.4	0.9
Debit cards	13.8	3.5	33.3	22.4	27.1
Credit cards	20.1	8.4	37.3	21.7	12.5
Prepaid cards	25.4	3.3	57.2	9.2	4.9
Electronic account deduction	11.0	3.0	43.5	32.0	10.6
Online bill payments	7.3	3.0	29.0	30.4	30.2
Expected (2008–2011)					
Cash	10.6	21.7	54.3	7.5	5.9
Checks	19.0	20.0	52.7	6.1	2.2
Debit cards	6.2	4.8	54.1	22.8	12.1
Credit cards	12.2	14.1	53.6	15.0	5.2
Prepaid cards	23.4	5.5	60.3	8.3	2.5
Electronic account deduction	10.8	4.4	58.0	20.3	6.5
Online bill payments	5.1	3.7	43.9	29.9	17.4

Assessments of Payment Instruments

Table 26

Assessments of Characteristics of Payment Instruments

Percentage of consumers

	Most Important	Least Important
Instrument characteristic rating		
Acceptance for Payment	8.6	7.6
Acquisition and Setup	0.4	41.3
Control over Payment Timing	10.9	18.1
Cost	10.1	5.5
Ease of Use	28.7	4.7
Payment Records	5.8	4.1
Payment Speed	4.0	17.9
Security	31.6	0.8

Table 27**Assessments of Payment Instruments, By Characteristic**

Percentage of consumers

	Rarely accepted	Occasionally accepted	Often accepted	Usually accepted	Almost always accepted
Acceptance for payment					
Cash	1.9	2.3	7.9	11.6	76.3
Check	1.6	11.3	31.5	36.3	19.3
Debit card	1.4	1.6	12.4	36.6	47.9
Credit card	1.7	0.1	7.1	31.8	59.3
Prepaid card	3.8	10.2	22.9	28.9	34.2
Electronic bank account deduction	13.5	19.3	26.3	19.4	21.5
	Very hard to get or set up	Hard to get or set up	Neither hard nor easy	Easy to get or set up	Very easy to get or set up
Acquisition and set up					
Cash	2.4	5.1	12.5	19.2	60.8
Check	2.6	8.9	20.7	47.5	20.4
Debit card	1.4	5.1	21.0	47.1	25.4
Credit card	5.0	7.7	21.1	43.0	23.3
Prepaid card	5.3	13.6	32.2	32.7	16.1
Electronic bank account deduction	5.6	16.7	25.9	37.4	14.5
	Very low control	Low control	Neither high nor low control	High Control	Very high control
Control over payment timing					
Cash	9.8	9.3	14.2	17.7	49.0
Check	5.8	22.7	26.9	33.2	11.4
Debit card	7.2	11.7	20.3	37.7	23.0
Credit card	5.8	14.2	21.8	39.3	19.0
Prepaid card	9.8	12.6	31.1	27.9	18.6
Electronic bank account deduction	8.2	10.8	22.3	30.2	28.6
	Very high cost	High cost	Neither high nor low cost	Low cost	Very low cost
Cost					
Cash	1.8	4.1	18.9	8.3	66.9
Check	2.1	12.4	21.8	40.9	22.8
Debit card	2.5	9.2	25.2	30.0	33.2
Credit card	20.2	31.3	17.0	18.2	13.3
Prepaid card	5.2	15.5	43.4	17.3	18.7
Electronic bank account deduction	3.1	10.2	31.3	22.6	32.8

Table 27**Assessments of Payment Instruments, By Characteristic—Continued**

Percentage of consumers

Ease of use	Very	Hard	Neither	Easy	Very
	hard to use	to use	hard nor easy to use	to use	easy to use
Cash	1.7	6.4	18.8	24.5	48.6
Check	2.3	19.3	29.8	34.1	14.5
Debit card	1.9	2.3	16.3	31.1	48.4
Credit card	1.4	2.7	12.4	32.1	51.3
Prepaid card	4.5	8.8	32.2	25.9	28.5
Electronic bank account deduction	6.2	9.3	29.7	27.0	27.8
Payment records	Very poor	Poor	Neither	Good	Very good
	records	records	good nor poor	records	records
Cash	30.7	21.0	25.7	11.5	11.1
Check	0.9	4.6	13.8	45.0	35.6
Debit card	2.4	5.0	20.1	39.8	32.7
Credit card	0.9	4.1	12.3	39.3	43.4
Prepaid card	12.1	20.9	41.0	13.6	12.5
Electronic bank account deduction	2.6	6.4	23.3	32.1	35.5
Payment speed	Very	Slow	Neither	Fast	Very
	slow		slow nor fast		fast
Cash	1.3	4.6	17.8	20.1	56.1
Check	8.6	29.0	33.5	22.3	6.7
Debit card	1.6	5.4	18.4	40.0	34.6
Credit card	1.9	6.1	17.2	40.9	34.0
Prepaid card	4.4	6.1	31.4	32.8	25.3
Electronic bank account deduction	3.2	8.5	27.9	27.5	33.0
Security	Very	Risky	Neither	Secure	Very
	risky		risky nor secure		secure
Cash	41.5	14.1	13.6	8.4	22.4
Check	11.9	33.4	19.7	24.4	10.6
Debit card	13.3	30.0	18.7	27.9	10.0
Credit card	15.4	27.8	14.6	28.9	13.3
Prepaid card	25.1	22.3	24.8	16.7	11.2
Electronic bank account deduction	10.4	19.4	22.2	25.8	22.1

Demographics and Financial Information

Table 28

Demographics: Gender, Age, Race, and Education, Weighted Sample

Percentage of consumers

Unit of observation	Individual
Gender	
Male	48.3
Female	51.7
Age	
18–24	13.0
25–34	17.8
35–44	19.4
45–54	19.3
55–64	14.6
65 and older	15.8
Addendum:	
18–34	30.8
Race	
White	76.7
Black	11.5
Asian	4.8
Other	7.0
Ethnicity	
Hispanic or Latino	13.5
Education	
No high school diploma	7.1
High school	38.2
Some college	26.5
College	19.2
Post-graduate study	9.1

Table 29***Income, Weighted Sample***Percentage of consumers

Household income	Percent
Less than \$75,000	72.3
Less than \$25,000	17.5
\$25,000–\$49,999	33.1
\$50,000–\$74,999	21.6
\$75,000 or more	27.7
\$75,000–\$99,999	14.2
\$100,000–\$124,999	6.3
\$125,000 or more	7.0
Category unknown	0.2
Respondent income	
Highest in household	53.3
About equal with highest	13.9
2nd highest	24.6
3rd highest or lower	8.2

Table 30***Assets and Liabilities, Weighted Sample***

	Mean	Median
Net worth, total (<i>dollars</i>)	299,265	145,000
Net worth total, non-homeowners	124,998	30,000
Net worth total, homeowners	372,774	189,000
Net worth, excluding primary home	230,933	100,000
Net worth, primary home	145,221	85,000
Market value	242,768	190,000
Debt	96,502	70,000
Loan to value ratio	0.46	0.47
Home ownership rate (<i>percentage of consumers</i>)	71.1	na
Credit card debt		
Unpaid balance last month (<i>dollars</i>)	3,389	90
Carried unpaid balance during the past 12 months (<i>percentage of consumers</i>)	56.3	na
Change in unpaid balance, past 12 months (<i>percentage of consumers</i>)		
Much lower	19.6	na
Lower	25.9	na
About the same	28.8	na
Higher	16.2	na
Much higher	9.5	na

Table 31**Time Allocation, Weighted Sample**Percentage of consumers

Labor force status	Percent
<i>In labor force</i>	
Employed	70.5
Unemployed	5.9
<i>Not in labor force</i>	
Retired	17.3
Homemaker	4.4
Other	2.0

Financial Responsibility

	Consumer's Responsibility				
	None	Some	Shared equally	Most	All
Household Financial Task					
Budgeting	6.4	13.2	21.4	12.6	46.4
Paying bills	10.4	12.5	17.2	9.7	50.3
Shopping	4.8	16.1	25.7	13.3	40.1
Managing assets	14.9	9.7	23.4	11.7	40.2

VIII. Appendices

Appendix A: Definitions

A.1 Definitions of Banking Concepts

Automated Teller Machine (ATM) - A machine that allows customers to access their bank accounts with an ATM card, debit card, or credit card to conduct any banking business, such as withdrawing cash, making deposits, viewing account balances, transferring money, and making other related transactions.

ATM card - A card that allows the cardholder to access bank accounts at an automated teller machine (ATM) or bank branch, but does *not* allow the cardholder to make payments by debiting a bank account.

Bank - A financial institution that accepts deposits in checking accounts and savings accounts. Examples include a commercial bank, savings and loan, credit union, and Internet bank.

Checking account (also called a **demand deposit account**) - A bank account that allows an unlimited number of on-demand withdrawals, and payments by check, debit card, or other payment instruments.

Debit card (also called a **check card**) - A card that allows the cardholder to make a payment that is deducted directly from a bank account at the time payment is made. A debit card may have a Visa or MasterCard logo, but it is *not* a credit card. A debit card also works as an **ATM card**.

Mobile banking - A method of accessing a bank account with a mobile device (cell phone, PDA, etc.) to conduct any banking business by accessing a bank's website on the Internet via text messaging or short message service (SMS), or by using a downloadable application for mobile banking. It is *not* the same as telephone banking conducted with a landline or cellular telephone.

Online banking - A method of accessing a bank account with a computer to conduct banking business by accessing a bank's website on the Internet. Also see "electronic bank account deduction" for related definitions.

Primary checking account bears interest – The consumer’s primary checking account earns interest from the bank.

Primary saving and checking accounts linked – The consumer’s primary checking account is linked to a savings account at the same bank to allow the bank to transfer money between these two accounts when the consumer overdraws the account. This feature is one type of **overdraft protection**.

Savings account (also called a **time deposit account**) - A bank account that allows a limited number of withdrawals per month, and only a limited number of payment options (no checks, for example).

Telephone banking - A method of accessing a bank account with a telephone (landline or cellular) to conduct any banking business by accessing an automated system orally, with the telephone keypad, or by speaking with a customer service representative. It is *not* the same as mobile banking with a mobile device.

A.2 Definitions of Payment Instruments

Cash (also called **currency**) - Coins, Federal Reserve notes, and other paper bills.

Check - A draft piece of paper directing a bank or other financial institution to pay a specific amount of money from a demand deposit account, as instructed, to a person or business.

Credit card (also called a **charge card**) - A card that authorizes the cardholder to make a purchase by granting a line of credit that will be paid back to the card company at a later date, possibly in installments. Examples include: Visa, MasterCard, Discover, American Express, and cards branded by retail, gasoline, or other companies.

Debit card (also called a **check card**) - A card that allows the cardholder to make a payment that is deducted directly from a bank account at the time of purchase or bill payment. A debit card may have a Visa or MasterCard logo, but it is *not* a credit card. A debit card also works as an **ATM card**.

Electronic bank account deduction (EBAD) - An electronic payment made directly from a bank account and initiated by a consumer who provides a bank account number and bank routing number to a non-bank third party via the Internet, orally, or in writing. This payment is made *without* using a paper check or payment card, and can be automatic or initiated and processed as needed. Examples include: automatic bill payment, bill payment made online at a company's web site (but *not* using online banking bill payment), other online payment, or payment made directly from income.

Money order - A draft piece of paper issued by a bank, post office, or telegraph office authorizing payment of a specified amount of cash from the issuing institution to the individual named on the order.

Online banking bill payment (OBPP) - A bill payment made directly from a bank account and initiated by a consumer using the bank's online banking bill payment function on the bank's website. The payment can be initiated either via the Internet or via a mobile banking application. This payment is made *without* using a paper check or payment card, and can be automatic or initiated and processed as needed.

Prepaid card (called a **stored value card** or **gift card**) - A card that can be used for payments up to the amount of money stored (or loaded) on the card. Often these cards may have a Visa or MasterCard logo, but they are *not* credit or debit cards. Examples

include: general purpose, specific purpose (retailers, telephone, public transportation, etc.), payroll card, and electronic benefits transfer (EBT).

Travelers check - A draft piece of paper issued by a bank or company and directing the issuer to pay a specific amount of money in cash, as instructed, to a person or business. It is similar to a check but works like cash and is protected against forgery, loss, and theft.

A.3 Definitions of Adoption

Concept	Consumer Behavior that Defines Adoption
ATM card*	Has a bank account and has an ATM card.
Cash	Holds cash (on person or on property), gets cash on a regular basis, or uses cash in a typical year.
Check	Has a checking account.
Credit card*	Has at least one credit card (with or without rewards).
Current adoption	The percentage of consumers who own a bank account or have a payment instrument, for example, and have not discarded it as of the time of the survey.
Debit card*	Has a bank account and has 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 thus do not own or have it now.
Electronic bank account deduction (EBAD)	Uses electronic bank account deduction 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 and has set up mobile banking.
Money order	Uses a money order in a typical year.
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.
Online banking*	Has a bank account and has set up online banking.
Ownership	Equivalent to adoption for bank accounts.
Prepaid card*	Has at least one prepaid card (bought by the consumer or received from someone else).
Telephone banking*	Has a bank account and has set up telephone banking.
Travelers check	Uses a travelers check in a typical year.

* In a small number of cases where respondents did not answer the direct 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

Concept	Consumer Behavior that Defines Use
Frequency of use	See "Use."
Incidence of use	The percentage of consumers who have used a particular payment instrument at least once during a typical period of time.
Incidence of use, annual	The percentage of consumers who have used a particular payment instrument at least once in a typical year.
Incidence of use, monthly	The percentage of consumers who have 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 in which the consumer does 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.

A.5 Definitions of Transactions

Automatic bill payment - A payment set up by a consumer to occur on a regularly scheduled basis, typically monthly, pre-authorizing a company to initiate regular payment from the consumer for a bill. Once set up, an ABP does not require additional effort by the consumer. An ABP can be set up orally (in person or by phone), in writing, or online. An ABP can be processed via electronic bank account deduction (EBAD), online banking bill payment (OBBP), debit or credit card, or directly from the consumer's income.

Bill payment – A payment made to a company or person at some date after the time when the company or person provided goods or services to a consumer. Examples include a payment to utility company for energy services provided during a month payment or a payment to service a loan such as a mortgage payment. Most bill payments occur at regular frequencies such as a week, month or year.

Essential retail payment - A payment made in person to buy basic goods from retail outlets, including: grocery stores, supermarkets, food stores, restaurants, bars, coffee shops, superstores, warehouses, club stores, drug or convenience stores, and gas stations.

In person/By mail bill payment - A bill payment made in person or through the mail.

Non-essential retail payment - A payment made in person to buy other goods from retailers, including: general merchandise, department stores, electronics and appliances stores, home goods, hardware stores, furniture stores, office supply stores, and other miscellaneous and specialty stores.

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 electronic bank account deduction (EBAD), online banking bill payment (OBBP), or debit or credit card.

Online payment (OP) - A payment (other than payment of a bill) made for an online transaction or transfer of funds. The purchase or transfer 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 definition are payments made via check or money order (sent by mail) as well as

payments made via debit or credit card or via electronic bank account deduction (EBAD), so long as the payment is made in connection with transaction initiated online.

Other non-retail payments - A payment made in person by a consumer for services such as: transportation and tolls, medical, dental, health and fitness, education, child care, personal care (for example, hair), recreation, entertainment, travel, maintenance and repairs, other professional services (business, legal, etc.), charitable donations, and person-to-person gifts.

A.6 Definitions of Characteristics of Payment Instruments

Characteristic	Text from SCPC Questions
Security	<p>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.</p> <p><i>Examples: None</i></p>
Acquisition & set up	<p>Rate the task of getting or setting up each payment method before you can use it.</p> <p><i>Examples: length of time, paperwork, learning to use or install it, or travel.</i></p>
Acceptance for payment	<p>Rate how likely each payment method is to be accepted for payment by stores, companies, online merchants, and other people or organizations.</p> <p><i>Examples: None</i></p>
Cost	<p>Rate the cost of using each payment method.</p> <p><i>Examples that raise the cost: fees, penalties, postage, interest paid or lost, subscriptions, materials.</i></p> <p><i>Examples that reduce the cost: cash discounts, rewards (like frequent flyer miles).</i></p>
Control over payment timing	<p>Rate the control each payment method offers over the timing of the actual payment and of the deduction of funds from a bank account.</p> <p><i>Examples: date of payment, time of payment, flexibility to change the date or timing of payment, grace periods, float.</i></p>
Payment records	<p>Rate the quality of records (paper or electronic) offered by each payment method.</p> <p><i>Examples: proof of purchase, account balances, spending history, usefulness in error or dispute resolution, or ease of storage.</i></p>
Payment speed	<p>Rate the speed of each payment method during a payment transaction. Do <i>not</i> include delays unrelated to the actual use of the payment, such as waiting in line.</p> <p><i>Examples: None.</i></p>
Ease of use	<p>Rate the ease of use of each payment method.</p> <p><i>Examples: effort to carry, physical requirements at time of payment, or ability to keep or store.</i></p>

A.7 Definitions of Miscellaneous Payment Practices and Concepts

Canceled check - A check that a bank or other financial institution has honored by having paid the specific amount directed. Canceled checks may be paper or electronic. They usually indicate "paid" on them and cannot be used for further payment.

Check conversion - A process by which the information printed on a paper check given for payment is converted into a one-time electronic payment on the automatic clearing house (ACH) network. Conversion may occur at the point of sale (POS) for a retail payment or after delivery to a U.S. Post Office box for a bill payment.

Contactless payment technology - Information technology embedded in a payment card, cell phone, or other device that allows a payment to occur by tapping or waving (but not swiping) the card or device near a special electronic reader without requiring a signature or entry of a personal identification number (PIN) to authorize the payment.

Electronic toll payment - A type of contactless payment technology affixed to a motor vehicle that allows drivers to pass through the toll gates and have the toll automatically billed to them rather than stopping to pay. Examples include: EZ-Pass, I-Pass, Smart Lane, and Smart Tag. The payment can be processed by electronic bank account deduction, pre-funded bank account or prepaid card, credit card, and sometimes other methods.

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 type of contactless payment technology that attaches to a key chain or similar device. Key fobs typically are branded by gas stations and credit card companies such as Visa, MasterCard, or American Express. A Mobil Speedpass is an example.

Overdraft protection - An agreement between a bank and its customer that directs the bank how to honor a payment made by the customer from a checking account when there are insufficient funds in the customer's account to cover the payment. Examples include: transfer from a linked savings account and credit card charge.

Overdraft - A payment or withdrawal from a checking account for more money than is currently in the account (also called "insufficient funds"). Overdrafts may occur when paying with a check, debit card, or electronic bank account deduction (EBAD).

Paid directly from income - A payment made for a consumer by an employer or other income provider directly from the consumer's wages and salaries or other income payments (such as interest and dividends, social security payments, retirement plan distributions, alimony, child support, welfare, trust fund distributions, and other money received).

Person-to-person payment - A transfers or transaction that is made directly between two consumers and does not involve a bank, private company, or government.

Reward - Any type of benefit given to payment cardholders when they use their cards to make purchases and 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

Survey Instrument

The survey instrument for the 2008 *Survey of Consumer Payment Choice (SCPC)* was developed primarily by the Consumer Payments Research Center (CPRC) of the Federal Reserve Bank of Boston. The 2008 *SCPC* is the fourth in a series of survey instruments focusing on U.S. consumer payment behavior that have been developed and implemented by the CPRC or AARP since 2003. For more details about the *SCPC* survey instruments, see Schuh (2010, forthcoming). The 2003, 2004, and 2008 *SCPC* can be downloaded from the CPRC website.¹³ The 2006 version of the survey can be downloaded from the AARP website.¹⁴

Conversion of Statistics for Other Uses

Results from the 2008 *SCPC* are presented at the micro level, from the perspective of the consumer. Users may wish to convert these statistics into numbers that represent the total U.S. macro-economy, as opposed to an average consumer in the U.S. For example, where the 2008 *SCPC* tables present the percentage of U.S. consumers who have a credit card, a researcher may want the total number of credit card users in the U.S. or, where the tables report the number of credit cards held per capita, they may need to know the total number of credit cards in the U.S. The easiest way to perform these conversions is to multiply the appropriate statistic by an estimate of the total number of applicable U.S. consumers.

The *SCPC* was in the data collection phase during November 2008. In that month, the U.S. Census Bureau estimated that the total civilian noninstitutionalized

¹³ See <http://www.bos.frb.org/economic/cprc/psp/index.htm>.

¹⁴ See http://www.aarp.org/research/surveys/money/credit/debt/articles/consumer_payment.html.

population in the United States aged 18 years and over was 225,852,350.¹⁵ The civilian noninstitutionalized population is defined as the total U.S. population minus people residing in institutions such as nursing homes, prisons and jails, mental hospitals, or juvenile facilities, as well as the active duty Armed Forces population residing in the United States. This is the population that the 2008 SCPC seeks to measure and a member of this population is referred to in this document as a "consumer."

For example, to estimate the total number of credit card users in the U.S. from the percentage of U.S. consumers who had a credit card in 2008, one would take the percentage of U.S. consumers who had adopted credit cards from Table 4 (78.3 percent), divide by 100, and multiply by the population in 2008 (225,852,350) to get 176.8 million consumers. Similarly, to estimate the total number of credit cards held by U.S. consumers in 2008, one would multiply the per capita number of adopted credit cards, which is reported in Table 7 (2.7 cards), by the same population count to get a total of 609.8 million credit cards held by U.S. consumers. Please note that the Federal Reserve Bank of Boston only officially endorses the values reported in the 2008 SCPC tables.

American Life Panel

The RAND Corporation administered the 2008 SCPC module 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 to log on to the Internet or by using a Web TV device that gives Internet access via a television.¹⁶ Web TV allows respondents who did not have previous Internet access to participate in the ALP and to browse the Internet or use email. Approximately 7 percent of ALP respondents use Web TV.

¹⁵ The specific statistic is available at <http://www.census.gov/popest/national/asrh/2008-nat-ni.html>. For more information on the U.S. Census Bureau estimates, please see Monthly Postcensal Civilian Noninstitutionalized Population (2008)

¹⁶ For more details about Web TV, see <http://www.webtv.com/pc/>.

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 to the remaining ALP participants.

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).¹⁷ Each month, the MS interviews approximately 500 households, of which 300 households are a list-assisted random-digit-dial (RDD) sample and 200 are re-interviewed from the RDD sample surveyed six months previously. The 200 re-interview Michigan participants are referred to RAND each month. Through August 2008, about 51 percent of these referrals agreed to be considered for the ALP, and about 58 percent of them actually participated in at least the 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 of potential panelists for the *SCPC*. Once in the ALP, participants tend to remain indefinitely; approximately three participants leave the ALP each month.¹⁸

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

¹⁷ 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/>.

¹⁸ The ALP also includes some respondents who were not obtained from the Michigan MS. These participants, called the "snowball sample," 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 the snowball sample is not randomly selected or representative of U.S. consumers, it is used only for testing survey modules. ALP snowball recruits tested the 2008 *SCPC* but were not included among the 1,010 official respondents.

SCPC target population is adults of ages 18 years and older, the ALP sample of respondents was restricted to include only individuals recruited after November 2006. The sample size for the 2008 SCPC was determined by the Federal Reserve Bank of Boston to be approximately 1,000. The actual sample size is 1,010, which represents a 90.7 percent response rate from the 1,113 panelists who were invited to participate.

Item Non-response and Extreme Observations

As with all surveys, the SCPC contains two types of problematic responses: (1) missing responses due to the non-response of consumer to survey questions (called “item non-response”); and (2) contaminated responses due to respondent error, ambiguity in the survey question or survey instrument, and other factors. This subsection explains briefly how each of these issues was handled in compiling the aggregate statistics in this document.¹⁹ For more information on item non-response see Groves, et al. (2009).

Many statistical agencies mitigate the effects of item non-response by imputing missing values. However, development of comprehensive imputation procedures is difficult and time consuming. The statistics in this document reflect a limited set of imputations for item non-response 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, non-response 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 non-response rates of less than 5 percent and most use questions have non-response rates in the single digits. Several survey design features were chosen to minimize non-response. Some of the key survey questions included online verification of respondent non-response. Also, the

¹⁹ More detailed documentation of these issues is forthcoming and will be posted on the CPRC website.

survey instrument solicited zero responses where it was difficult to distinguish non-response 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 non-response 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 quantitatively large outliers. Consequently, all of the outliers identified were associated with continuous variables whose responses were in dollar values (for example, cash holdings, net worth, etc.) or 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 was inconsistent with earlier responses.

Outliers were identified by extensive investigation and analysis using a variety of quantitative and qualitative methods that exploited the structure and interrelationships of the entire *SCPC*. In addition to the survey itself, the analysis of outliers used evidence from outside of 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. For number of payments, however, some of the disaggregated statistics shown in the tables have not yet been evaluated for influential outliers. The statistics in Tables 19 and 20 have been fully evaluated for outliers, but the statistics in Tables 21–23 have not been fully 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 the missing values from outliers were imputed; missing values from item non-response, 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 non-response and standard errors should be adjusted for the imputation of very 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 non-response on specific questions.

Sampling Weights

As with all surveys based on random samples, the composition of the un-weighted sample differs from the population composition. 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. 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 2008 *SCPC* were constructed using the March 2008 wave of the CPS, which includes the annual income supplement.

Three weighting methods have been implemented for the ALP: cell-based post-stratification, logistic regression, and raking.²⁰ After some experimentation, raking was found to give the best results for the *SCPC*. It 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 that all distributions are matched separately for males and females. The resulting set of variables whose distributions are matched exactly is:

²⁰ 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.

- 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.

Standard Errors

Standard errors for the estimates reported in the 2008 *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.²¹

The 2008 *SCPC* Tables report two types of estimates: means (averages) and medians. Median statistics are reported alongside the mean statistics for questions for

²¹ See <http://www.bos.frb.org/economic/cprc/psp/index.htm>.

which the distribution of responses indicates large differences between the mean and median. These questions include the dollar values of cash (Tables 10–12) and net worth (Table 30), and the frequency of use of payment instruments (Tables 19–20).

Standard errors of the estimates were calculated using the SAS software package. Weighted standard errors of the estimates of the means were computed, using the SAS procedure “*Surveymeans*” with the *SCPC* weighting variable (*r_weight*). Weighted standard errors for the estimates of the medians were computed in SAS, using the bootstrapping method described in Efron and Tibshirani (1986). All standard errors were calculated after the treatment of item non-response and the data cleaning had been completed.²²

The magnitude of the standard errors in the *SCPC* depends on the type of reported statistic. Most of the standard errors range between approximately 1 and 3 percentage points for estimates reported in terms of percentage of consumers—including those concerning adoption, incidence of use, characteristics of payment instruments, and demographic information. An exception is changes in use (Table 25), for which the typical range of standard errors is approximately 2 to 5 percentage points. Most of the standard errors are 1 percent or less for estimates of the percentage of payments made by a consumer in a typical month (Tables 19–23).

The standard errors of statistics reported in natural units depend on the absolute magnitude of the statistic. For example, the standard error of cash holdings is \$30, compared with a mean estimate of \$230, and the standard error of monthly cash withdrawals is \$24, compared with a mean estimate of \$336 (Table 10). For adoption of payment instruments by consumers, the standard error of the number of instruments per consumer is 0.1, compared with a mean estimate of 5.0 (Table 8). For consumer ages, most standard errors are less than 2 years (Table 9).

²² The data cleaning and imputation process has a very minor effect on a small number of the standard errors.

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 98.2 percent (Table 4) and the 95 percent confidence interval for this estimate includes the estimate of 100 percent. This conclusion 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. However, as in most applications, we have not done this. Instead, 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 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 ($RSE \times 100$). For estimates (mean or median) that are very near zero, the RSE can be particularly sensitive to small changes in the SE . Roughly 5 percent of the approximately 2,700 data points (means and medians) in the 2008 *SCPC* Tables have an RSE greater than 30 percent. Users of the *SCPC* should exercise caution when interpreting data results with an RSE of 30 percent or greater.

Appendix C: 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

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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

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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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