

Summary of the Workshop on *Consumer Behavior and Payment Choice*

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Abstract:

This paper summarizes and outlines some interesting issues that arose during a recent workshop on *Consumer Behavior and Payment Choice*, hosted by the Federal Reserve Bank of Boston's Emerging Payments Research Group (EPRG) on July 25, 2008. Topics addressed are the consumer adoption of new payment technologies, credit card debt management, payment card surcharges, and involuntary bank account closures.

JEL Classifications: D13, D14, E41, G11

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The views expressed in this paper are the authors' and do not necessarily reflect the views of the Federal Reserve Bank of Boston or the Federal Reserve System.

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On July 25, 2008, the Boston Fed hosted a workshop on *Consumer Behavior and Payment Choice*. This was the third event sponsored by the Bank’s Emerging Payments Research Group (EPRG) since 2005.¹ The table below lists the papers presented at the workshop:²

Paper	Authors (affiliation)
“Incentives at the Counter: An Empirical Analysis of Surcharging Card Payments and Payment Behaviour in the Netherlands”	Wilko Bolt, Nicole Jonker, and Corry Van Renselaar (De Nederlandsche Bank)
“Market Structure and the Diffusion of Electronic Banking”	Jason Allen (Bank of Canada), Robert Clark (HEC Montreal), and Jean-François Houde (University of Wisconsin-Madison)
“The Effects of Payment Instruments on Charitable Giving: Evidence from a Field Experiment”	Adriaan Soetevent (University of Amsterdam and Tinbergen Institute)
“Do Consumers Borrow on their Cheapest Credit Card? Evidence from Mexico”	Alejandro Ponce (Stanford University), Enrique Seira and Guillermo Zamarripa (SHCP, Mexico)
“Dynamics of Consumer Adoption Decisions of Financial Innovation: The Case of ATM Cards in Italy”	Botao Yang and Andrew Ching (University of Toronto)
“Bouncing Out of the Banking System: An Empirical Analysis of Involuntary Bank Account Closures”	Dennis Campbell, Asís Martínez-Jerez, and Peter Tufano (Harvard Business School)

As did the previous two conferences, this workshop maintained the EPRG’s focus on payments from the consumer perspective. This discussion paper synthesizes and describes some interesting issues that arose during the workshop. For each topic, we discuss the economic implications of consumer payment behavior, consider potential market failures, and ask whether the market failures—if these exist—warrant public policy intervention to address them. We organized the paper around the following common themes:

¹ The agendas and papers from the previous two conferences are available at <http://www.bos.frb.org/news/conf/payments2005/index.htm> and <http://www.bos.frb.org/economic/eprg/conferences/payments2006/index.htm>. Previous conference summaries are available at <http://www.bos.frb.org/economic/ppdp/2006/ppdp061.pdf> and <http://www.bos.frb.org/economic/ppdp/2007/ppdp0704.pdf>.

² The complete agenda and papers from this year’s workshop are available at: <http://www.bos.frb.org/economic/eprg/conferences/payments2008/index.htm>.

- Consumer adoption of new payment technologies
- Credit card debt management
- Payment card surcharges
- Involuntary bank account closures

We conclude the paper by considering the need to collect more comprehensive data on consumer payment choice, and the implications such availability will have on research and policy questions.

Consumer Adoption of New Payment Technologies

The process of adopting new payment technologies—just like any technology adoption—is costly, slow, and uneven across consumers (Hayashi and Klee 2003; Kolodinsky, Hogarth, and Hilgert 2004; Plouffe, Vandenbosch, and Hulland 2000). There is a common policy presumption that new technologies are cheaper and better for consumers and for society as a whole. If this assumption is correct, are there barriers to the adoption of new payment technologies? If so, are these barriers market failures that require redress through policy intervention? Are there particular policies that, by accelerating the adoption process, might increase social welfare? The findings presented in a couple of the conference papers touched on the reasons for differences in technology adoption among consumers.

On the supply side, the pace of substitution of electronic payments for paper checks, such as online banking bill payments, may vary with the banking industry's market structure. Banks with greater market power may deliberately lower the quality of their branch services to encourage their customers to switch to lower-cost online services.³ In contrast, banks operating in competitive markets may be more reluctant to adopt that strategy for fear of losing customers to their competing banks. Combining branch location data with Canadian household survey data on consumer assessments of the quality of bank branch services, Allen, Clark and Houde ("Market Structure and the Diffusion of Electronic Banking") found that banks in more concentrated markets and banks with more market power were more

³ Banks may also induce their customers to adopt electronic payments by offering attractive low-price alternatives to traditional payment services, such as free digital images of checks. This is just one possible way of enticing customers to switch to online payment services.

likely to lower the quality of their branch services. The authors conjectured that banks adopt this strategy to encourage their customers to switch to online payment technologies.

Under that reasoning, differences in market structure across regional and national banking markets might explain the varying rates of technology adoption among consumers, even if consumer attributes do not vary across markets. Namely, banks located in highly-concentrated markets would encourage technology adoption more aggressively than banks in more competitive markets. Although even banks with a great degree of market power might face a threat of entry by potential competitors in the long run, the strategy described here may be profitable in the short run. Previous research found support for the existence of network externalities, where payment technology adoption by banks is affected by the adoption by other banks in the area (Gowrisankaran and Stavins 2004), but future research along these lines should incorporate market structure effects.

If banking market concentration is negatively correlated with the quality of payment services, should we be concerned about potential market failures that might require government intervention? Bank merger analysis in the United States is based on the “U.S. Department of Justice Merger Guidelines,”⁴ which use market concentration (as measured by the Herfindahl index) as the basis of the analysis. A merger that would raise market concentration above the threshold level typically triggers additional analysis. Although *having* market power is not illegal in the United States, *excessively increasing* market power through a merger might be prevented. It would be interesting to find out whether there are banks in the United States whose market power allows them to provide inefficiently low-quality branch services, so that their customers are induced to switch to online payments even though the substitution lowers their welfare. Inversely, if online banking payments are more efficient than traditional paper-based payments, why are more consumers not switching? Is it because online payments have a lower total social cost, but the benefits accrue only to financial institutions or businesses, not to individual consumers, and therefore

⁴ “U.S. Department of Justice Merger Guidelines,” June 14, 1984. The sections on horizontal mergers have been superseded by the “Horizontal Merger Guidelines” issued April 2, 1992, and revised April 8, 1997, by the U.S. Department of Justice and the Federal Trade Commission. These are available at http://www.usdoj.gov/atr/public/guidelines/horiz_book/hmg1.html

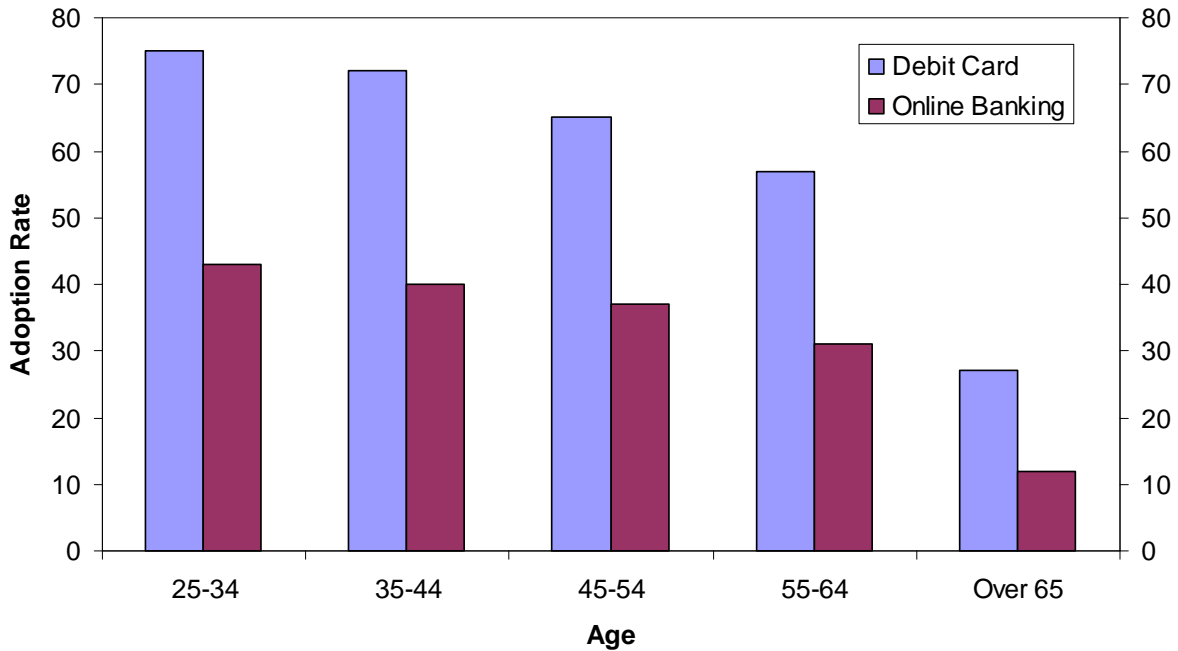
the problem lies in the allocation of costs and benefits and the resulting externalities? Or are there other market failures that prevent consumers from participating in the most optimal payment methods? Are these shortcomings related to banking market structure? Those questions clearly require further research.

On the demand side, there is ample evidence of a link between the adoption of new payment technologies and the age of the individual consumer making the switch, with younger consumers more likely to adopt such electronic payments as debit cards or online banking. The chart below on the following page shows the adoption rates of debit cards and online banking by age cohorts in the United States.⁵ In both cases, the rate of adoption is lower for older consumers, and substantially lower for those over the age of 65.

But our understanding of *why* this age-adoption relationship exists is not clear. Many people assume that older consumers shy away from new technologies because it is more difficult for them to understand or learn how to use them; in other words, the cost of adopting new technologies is higher for older consumers (Mattila, Karjaluoto, and Pento 2003). While that explanation is plausible, there may be another reason. For example, older consumers may find that it is not worthwhile for them to invest the time, effort, and/or money to adopt a new technology if they will only use it for a short time (as one workshop participant observed: “at some point you don’t want to buy green bananas”). Stated differently, given their shorter time horizons, the benefits older consumers might enjoy from the new form of payment—such as faster transactions or the possibility of paying bills on their computers—may be lower than their cost to adopt that technology. Using Italian survey data and the example of automatic teller machine (ATM) adoption, Yang and Ching (“Dynamics of Consumer Adoption Decisions of Financial Innovation: The Case of ATM Cards in Italy”) showed that the present value of benefits from adopting a new technology may be lower for older consumers, who have less time to reap those benefits and may not

⁵ In the Survey of Consumer Finances, the respondents were asked: “What are the main ways you do business with this institution?” for each of their depository institution. The respondents were given a list of possible answers and allowed to select as many as were applicable. One of the options was defined as: “Computer/Internet/Online service/E-mail.” They were coded as adopters if they selected that option for at least one of their depository institutions.

Technology Adoption by Age



SOURCE: 2004 Survey of Consumer Finances⁶

recover the costs of technology adoption.⁷ The authors found that in Italy the elderly did not have higher ATM adoption costs, but rather that their lower adoption rates could be explained by realizing lower benefits from adapting to this new technology when compared to younger consumers. The distinction between the alternative explanations for differences in adoption rates is an important one. If the reason for low adoption rates among older consumers is their lack of understanding of the technology, should we enforce the provision of financial literacy education or of information about newer technologies? If the reason is a difference in time horizons, is there a justification for policy intervention or is the outcome optimal? And even if the outcome is privately optimal for each individual user, it still may not be socially optimal—for example, the fixed cost of maintaining an old technology could exceed the incentives needed to induce the older users to switch.

⁶ http://www.federalreserve.gov/pubs/oss/oss2/2004/scf2004home_modify.html

⁷ Huynh, Schmidt-Dengler, and Smith (2008) also analyzes adoption costs using the data from the Bank of Italy Survey of Household Income and Wealth.

Credit Card Debt Management

The amount of revolving debt—mainly credit card debt—carried by the average U.S. household in 2007 exceeded \$8,000.⁸ According to the Survey of Consumer Finances, the average household has approximately four credit cards. Almost half of U.S. credit card holders carry debt on their cards,⁹ and the rates of interest on credit cards vary across different plans. Therefore, the order in which consumers decide to pay back their credit card loans can make a difference in the cost of servicing their debt.

To minimize the cost and time required to pay down credit card debt, standard theory holds that a consumer should first pay down credit card debt with higher interest rates before retiring other debt carrying lower interest rates. This strategy, however, may not be the way that consumers actually manage their credit card debt. Dave Ramsey, a popular U.S. consumer finance writer, lauds a strategy of paying off the lowest-balance card first, and not the highest-rate one, for the psychological benefit of gaining momentum towards paying off entire balances.¹⁰

The table below shows the results of Ramsey’s “momentum” strategy (Ramsey also calls it “debt snowball” strategy) compared with the “rational” strategy of paying off the highest interest debt first. In this hypothetical example, a consumer begins with \$6,000 in debt spread evenly between three credit cards with annual percentage rates of interest (APRs) of 10, 15, and 20 percent. Additional details are provided in the notes below. The table lists the time it takes to repay the first credit card, the time to repay all credit card debt, and the total interest expenses associated with each strategy. The table shows that if the consumer chooses the momentum strategy, s/he will pay down the first card three months faster. However, s/he will pay \$389 of additional interest expenses (more than 20 percent of the “rational” expenses) and eventually pay off the total debt four months later than under the rational strategy.

⁸ This amount represents the total revolving debt from the Federal Reserve Board’s G.19 Release on Consumer Credit. The total number of U.S. households from Haver Analytics.

⁹ 2004 Survey of Consumer Finances, as cited earlier.

¹⁰ Brigitte Madrian made this point in her discussion of Ponce, Seira, and Zamarripa (2008). See <http://www.daveramsey.com/etc/cms/index.cfm?intContentID=4055>.

A "momentum" payoff plan verses a "rational" plan			
Payment Plan	Time to repay first card (Months)	Time to repay all cards (Months)	Interest Expense
"Momentum" Plan	29	65	\$2,030.71
"Rational" Plan	32	61	\$1,641.93
Difference	-3	4	\$388.78

Notes: Results are based upon an assumed consumer with a balance of \$2,000 on each of three credit cards: with 10, 15 and 20 percent APR, compounded monthly. Each card has a 3 percent minimum payment. In addition to the minimum payment, the consumer pays \$50 each month towards paying down one card. In the "rational" case the consumer begins by paying down the card with the highest interest rate. In the "momentum" case the consumer starts by paying off the card with the lowest interest rate and hence builds momentum by paying the first one off before the others.

Ponce, Seira, and Zamarripa (“Do Consumers Borrow on their Cheapest Credit Card? Evidence from Mexico”) found that Mexican consumers who routinely carry credit card debt (“revolvers”) generally do not pay down the balances on their credit cards with the highest interest rates. Instead, they pay more toward cards they used the most for purchases in the previous month, regardless of the interest rate, thereby incurring higher interest charges. Consumers may decide to repay their lowest-balance card first to gain momentum towards eliminating their entire debt, *or* to repay their highest-rate card first to minimize their cost, but they should have the necessary information about the cost of each decision.

Previous research has shown that consumers’ decisions regarding credit card debt financing may be difficult to explain using a standard economic rationale (Laibson, Repetto, and Tobacman 2002; Agarwal et al., 2007). For example, consumers often hold credit card debt while also maintaining a high balance in their checking or savings accounts, and cardholders often assume that they will not borrow when obtaining a card, but later find themselves unable to stick to those a priori beliefs. However, at least in the case of add-on fees, such as over limit or late fees, there is evidence that “credit card users learn how to minimize add-on fees by paying them” (Agarwal et al., 2007).

Clearly, the mere fact that cardholder behavior is difficult to explain does not by itself justify policy intervention. But do these debt management findings have any implications for U.S. proposals to change credit card laws and regulations? On May 2, 2008, the Federal

Reserve Board proposed changes to its Regulation AA (Unfair or Deceptive Acts or Practices) that include the following provisions:

- Banks would be prohibited from applying credit card payments in excess of the minimum due in a manner that maximizes interest charges over the life of the loan.
- Banks would be required to give consumers the full benefit of discounted promotional rates on credit cards by applying payments in excess of the minimum to any higher-rate balances first, and by providing a grace period for purchases where the consumer is otherwise eligible.¹¹

These provisions are intended to eliminate credit card industry practices that the Board deems “unfair.” But besides regulating the unfair practices, should the issuers be required to show cardholders in a transparent way how their own repayment strategies affect their cost of borrowing? For example, monthly credit card statements emphasize the minimum payment due—often denoted in bold font—but not the total amount of debt. Should the issuers be required to include on that statement the length of time it would take to repay the outstanding balance and the total amount of interest that would have to be paid if the cardholder sends only the minimum amount due each month? Is the potential benefit from such a policy intervention—better educated and informed consumers—sufficient to offset the potential cost of such regulation?

Payment Card Surcharges

Merchants in the United States are bound by “no surcharge rules” for payment cards, whether credit or debit. In other words, U.S. merchants cannot impose surcharges on consumers who pay with cards.¹² In contrast, merchants in the Netherlands are allowed to surcharge consumers who pay with a debit card; however, only some Dutch merchants actually choose to surcharge debit card payments. Using these differences, researchers can estimate the impact of surcharging on the demand for debit cards by estimating the effect of

¹¹ <http://www.federalreserve.gov/newsevents/press/bcreg/20080502a.htm>

¹² See Chakravorti (2003) for a summary of credit card markets in the United States.

surcharging on the decision of whether or not to use debit, while controlling for many characteristics of the consumers and the retail establishment.

Based on the results in Bolt, Jonker, and Van Renselaar (“Incentives at the Counter: An Empirical Analysis of Surcharging Card Payments and Payment Behaviour in the Netherlands”), debit surcharges in the Netherlands appear to induce consumers to increase their use of cash as a payment method (credit cards are very rarely used by Dutch consumers). While the results are interesting, the paper leaves some issues unresolved. In particular, debit acceptance and surcharging are left to the discretion of the individual merchant. Only a small fraction of merchants surcharge, and those who do, typically only surcharge transactions under 10 euros, but the data did not allow the authors to explore the effect of the threshold amount on the payment method used to complete the transaction.¹³ When, in the absence of the no-surcharge rule, merchants are free to charge retail prices that vary with the method of payment, the effect of interchange fees on payment card transactions may be neutral.¹⁴ This is because every party involved in the transaction (card issuer, acquirer, and merchant) simply passes through the increase in price. The consumer may end up bearing exactly the difference in cost between paying with cash and paying with card. But the result depends on the exact market conditions, and so it is difficult to draw any conclusive welfare results without taking many specific market conditions into account.

Nevertheless, the Dutch analysis may provide some useful insights for the United States by helping to estimate price elasticities of demand, or the effect of price changes on spending and consumption. Price elasticity is interesting not only to economists, but also to marketing professionals and retailers who decide how to set prices in order to maximize their firm’s profits. While in the past differential pricing by payment method used to be common in the United States, it is now rare. However, some gasoline stations give discounts to those customers who pay with cash, and it seems that recent gasoline price increases have made the practice more popular again. One reason may be that as the gasoline prices are rising, so are the interchange fees, which are calculated as a percentage of the retail price. As a result,

¹³ Customers might spend more than they initially intended in order to avoid the surcharge or may shop at another store.

¹⁴See Rochet and Tirole (2002); Gans and King (2003).

the difference in the merchant's cost of accepting cash and credit rises, giving some merchants an incentive to differentiate prices at checkout, despite the transactions costs associated with charging multiple prices or the fear of alienating some customers.

Little is known about consumers' awareness of interchange fees. Are consumers aware of the interchange fees that their credit card transactions involve? How do they respond when prices vary according to the payment method used? Further research should test how consumer behavior changes when they are offered cash discounts. And when prices are equal regardless of the payment method used, what are the welfare and distributional consequences of interchange fees on the various market participants?

Involuntary Bank Account Closures

From 2000 to 2005, banks closed about 30 million consumer checking accounts because of excessive overdraft activity. In most cases, the closings occurred when individuals repeatedly overdrawn their account, either by writing checks or using debit cards for more than the account's available balances. A bank account closure may be due to a consumer's poor financial management, but it also reflects a bank's policies regarding their overdrawn customers, as the closing is made at the discretion of the financial institution where the account is held. From a social welfare perspective, an involuntary bank account closing is a potential concern because once a person's account is closed, s/he has very limited options as to how to conduct any financial activity. In fact, s/he may be prevented from opening an account or obtaining a loan at any bank, not just the institution where the account was held, as discussed by Campbell, Martinez-Jerez, and Tufano ("Bouncing Out of the Banking System: An Empirical Analysis of Involuntary Bank Account Closures"). This problem is magnified by the fact that the options available to consumers with any prior negative events, such as involuntary account closing, are costly,¹⁵ which may raise policy concerns given the rising income inequality in the United States.

¹⁵ For example, check cashing. See Desmond and Sprenger (2007).

Although the Federal Reserve Board publishes consumer guidelines on how to avoid overdrafts,¹⁶ the issue of involuntary account closings, which has mainly been of interest to consumer advocates, has attracted very little research on the causes and consequences. Campbell, Martinez-Jerez, and Tufano investigated the factors that contribute to account closings in the United States. by looking at the characteristics of people whose bank accounts have been involuntarily closed. According to their research, this phenomenon mainly reflects the effects of household financial mismanagement. Counties with high rates of single mothers, low levels of education, and high rates of crime are especially vulnerable. The closure decision is made by banks and this decision can have significant, long-lasting effects on consumers' financial well-being. Tolerance of excessive overdraft activity can generate significant fee revenue for banks—instead of electing to close a poorly managed account, a bank instead may have an incentive to keep it open and generate revenues by charging high overdraft fees.

This paper is agnostic on whether any policy intervention is warranted. Research shows that most U.S. consumers have limited basic financial knowledge and weak mathematical skills pertaining to financial calculations (Lusardi 2008), shortcomings that inhibit their ability to make well-informed saving and spending decisions. Evidence on the effectiveness of financial education programs is mixed, so it is not clear yet whether more financial education for consumers who are facing financial difficulties and possible bank account closures would be effective. In particular, would educating consumers who are facing the possibility of account closure enhance their welfare? Should financial institutions be required to inform consumers about the cost of overdrawing an account and let these customers know what their options are when they are liquidity constrained? Would the benefit to consumers offset the social cost of imposing such a requirement on financial institutions? More fundamentally, it may be useful to ask whether some types of consumers might benefit from an alternative to a traditional bank account, a solution which may require some banking or financial innovation from the private sector.

¹⁶ See <http://www.federalreserve.gov/pubs/bounce/default.htm>.

In cases of overdrawn accounts, banks often cover the insufficient funds by treating it like a loan and imposing high overdraft fees for that service, even if the customer did not approve the loan in advance.¹⁷ Legislation to prevent this practice is already being considered—the Federal Reserve Board has proposed amendments to Regulation DD, which implements the Truth in Savings Act. The proposal includes a provision that would protect consumers who overdraw their bank accounts: “The proposed amendments would set forth content and timing requirements for a notice to consumers about any right to opt out of an institution’s overdraft service. Requirements for disclosing overdraft fees on periodic statements would be expanded to apply to all institutions and not solely to institutions that promote the payment of overdrafts.”¹⁸ Clearly, regulation is moving towards more transparency and disclosure. The effects of the proposal should be monitored to determine if its implementation produces sufficient changes. Should banks be required to do more than just ask for their customers’ approval—for example, should banks inform those consumers facing a possible account closure of the sources of credit available to them and the respective costs of using those sources?

Summary: Implications for the Development of Consumer Payment

Data

Even though the papers presented at the workshop dealt with different aspects of consumer payment behavior, they all had something in common—each utilized a unique data source that in large measure was previously unexplored. The workshop confirmed our findings from the previous conferences on *Consumer Behavior and Payment Choice*, namely the immense value of developing high-quality data on consumer payment behavior. At our 2006 conference,¹⁹ a panel comprised of representatives from private business, the federal government, the financial services industry, and the academic/research community all

¹⁷ Banks defend their policies by maintaining that the fees they charge are less costly than the potential damage to the account holder’s credit score plus the fee that a merchant would charge for a bounced check. We are grateful to Christina Wang for this observation.

¹⁸See <http://www.federalreserve.gov/newsevents/press/bcreg/bcreg20080502a2.pdf>.

¹⁹See <http://www.bos.frb.org/economic/eprg/conferences/payments2006/index.htm>

agreed that there is a need to collect more data on consumer payments behavior and to make the results of such research and analysis available to the general public.

Although this year's workshop showcased some creative and insightful use of new data sources, much progress remains to be made in developing sufficient data on consumer payment behavior. To that end, the EPRG has launched the *Survey of Consumer Payment Choice* (SCPC)—a national, comprehensive, and representative survey of U.S. consumers regarding their payment habits and preferences. The SCPC was written by the EPRG and administered by the RAND Corporation in September 2008, as part of RAND's American Life Panel program. The survey will provide publicly available data on the adoption and use of payment instruments by U.S. consumers, as well as information about consumers' attitudes, characteristics, and payment practices. This information will help researchers address many questions about how and why consumers choose payment methods, and may shed some light on the unanswered and unresolved policy questions posed here.²⁰

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²⁰ We hope to share the results of that survey in the near future. Watch the EPRG website for information and updates: <http://www.bos.frb.org/economic/eprg/index.htm>.

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