

Chicago Fed Letter

Forces shaping the payments environment: A summary of the Chicago Fed's 2005 Payments Conference

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Three main forces—innovations, incentives, and regulation—have affected the migration to more efficient payment mechanisms. Though several payment alternatives have been introduced recently, many have not been widely adopted. The Chicago Fed held a conference to explore why certain payment innovations have been more successful than others.

As payment systems evolve, policymakers should continue to reevaluate the existing regulatory and legal infrastructure.

On May 18–19, 2005, the Federal Reserve Bank of Chicago hosted its fifth payments industry conference, titled “Innovations, Incentives, and Regulation: Forces Shaping the Payments Environment,” in order to address the issues affecting the adoption of new payment method alternatives in the United States and elsewhere.¹ The conference brought together over 170 payment industry participants who represented corporations, financial institutions, payment networks, third-party processors, the academic community, law firms, merchants, and solution providers. This *Chicago Fed Letter* summarizes participants’ responses to the conference’s primary questions:

- What emerging innovations have the greatest potential to improve the payment system?
- Why have certain payment innovations been more successful than others?
- How does the current legal and regulatory framework affect the adoption of efficient payment mechanisms?

A recent Federal Reserve study showed that while the number of electronic

payments in the United States reached 44.5 billion, the number of check payments remained substantial at 36.7 billion in 2003.² The decline in check usage is particularly slow in certain market segments, such as corporate and consumer remote bill payment, despite technological improvements that have increased the opportunity for participants to use electronic alternatives.

In addition to promoting the substitution of checks by electronic payment alternatives, various payment processors are encouraging the presentment of electronic check images and the conversion of checks to automated clearing house (ACH) payments. Such cost reducing strategies may improve overall payment system efficiency, especially if consumers and businesses are reluctant to migrate directly from checks to electronic alternatives.³

Cash usage may also be decreasing. Cash transactions are difficult to estimate because they are difficult to track.⁴ However, greater acceptance of credit and debit cards at traditionally cash-only merchants, e.g., quick service restaurants, would suggest that cash usage is decreasing if the number of total transactions has not increased sufficiently

to offset the substitution effect from cash to noncash payments.⁵ According to a recent survey, consumers are using payment cards instead of cash for a greater proportion of their in-store purchases.⁶

Three main forces continue to affect the migration to efficient payment mechanisms: innovations, incentives, and regulation. Advancements in computing power, network connectivity, and telecommunications have resulted in numerous payment method innovations. However, many have not been successful in the marketplace because some payment participants lacked sufficient incentives to change their payment behavior. To gain critical mass in the marketplace, payment providers have to convince simultaneously a large number of participants of the benefits of new payment mechanisms.⁷ For example, general purpose electronic alternatives for low-value cash transactions are becoming increasingly available around the world, but consumer usage of these instruments make up only a small proportion of the total number of these types of transactions.⁸ However, niche applications of stored-value cards in closed-loop environments have been successful, especially when consumers are limited to one payment form.⁹

As payment systems evolve, policymakers should continue to reevaluate the existing regulatory and legal infrastructure and, where appropriate, reduce barriers inhibiting the widespread adoption of efficient payment mechanisms. One example of such a regulatory change is the recent passage of the Check Clearing for the 21st Century Act (the Check 21 Act). This act introduces a new negotiable instrument, the substitute check, and deems it the legal equivalent of the original check.¹⁰ Recent examples of regulatory changes in other countries include the removal of no-surcharge policies for credit card purchases, the explicit regulation of interchange fees in payment card networks, and the reduction of entry barriers to new payment service providers.

Innovations keynote address

In his introductory remarks, Charles Evans, senior vice president and director of research, Federal Reserve Bank of Chicago, noted that the increase of online purchases has led to innovative payment solutions. One such solution, which builds upon existing payment infrastructure, is provided by PayPal, a wholly owned subsidiary of eBay. Jeff Jordan, president of PayPal and the opening keynote speaker, observed that over 900 million people used the Internet, many of them to buy and sell goods and services. He estimated that over 500,000 U.S. residents make part or all of their income by selling products on eBay.

Jordan recalled that an early obstacle to eBay's growth was the delay in the delivery of goods and services due to the processing of payments. The time span between when a seller received, deposited, and waited for a check to clear and the buyer received the goods could have been up to three weeks. For extremely small businesses, traditional electronic payment alternatives were often cost prohibitive. Instead of creating a new payment network, PayPal provided small merchants access to existing networks, such as ACH and payment card networks, with which they and their consumers were already familiar.

While PayPal was able to simplify the payment process for buyers and sellers, it also made it easier to commit fraud. In response to the rapidly growing fraud threat, PayPal devised various risk-management and fraud detection systems to significantly counter the threat of fraud. Today, PayPal's loss rates are around 26 basis points, well below the over 100 basis points experienced in the fall of 2000.

The case of PayPal demonstrates that if existing payment products are unable to satisfy the requirements of the marketplace, new providers may emerge to provide superior payment solutions. Interestingly, such products may be provided by nontraditional payment providers. However, it appears that most successful innovations tend to

build upon the existing payment infrastructure.¹¹ Thus, partnerships with existing payment providers and networks may be critical for greater market adoption.¹²

The evolving payments landscape

Key issues discussed in the first conference panel included developments in the provision of payment services, the costs and benefits of different payment services to various participants, and the differing legal protections against fraud losses for payment system participants. This panel featured Oliver Ireland (moderator), partner, Morrison and Foerster, L.L.P.; Thomas Brown, vice president and senior counsel, Visa USA, Inc.; Ronald Mann, professor, University of Texas School of Law; and Alan Frankel, senior vice president, Lexecon.

Ireland opened the discussion by presenting a historical sketch of the provision of payment services by private and public entities. He argued that the payment system has not evolved rationally because of the deep emotional attachment of consumers to certain payment types, for instance, checks in the United States. He stressed that gaining market adoption is a major challenge in the migration to efficient payment mechanisms.

Frankel argued that competition in retail payment systems is dysfunctional. He observed that consumers in the United States do not face the right incentives to use what he considered to be the faster, more efficient, and more secure payment instrument—the PIN-based debit card.¹³ For example, consumers generally pay the same price regardless of the instrument they use to pay for goods and services.¹⁴ Moreover, consumers often receive additional benefits for using their credit and signature-based debit cards, like frequent-use awards. Later in the conference, Denis Bouchard from Wal-Mart noted that consumers may be charged per-transaction fees by their financial institutions when they use their PIN-based debit cards. However, merchant fees are generally lower for PIN-based debit cards than signature-based cards, resulting

in consumers and merchants preferring different payment instruments.¹⁵ In addition, Frankel stressed that interchange fees set by payment card networks distort the incentives for consumers to use more efficient payment mechanisms because financial institutions prefer to promote more profitable but less efficient payment products.¹⁶ Interchange fees are paid by the merchant's financial institution to the cardholder's financial institution. The interchange fee is a key factor in the determination of fees that merchants negotiate with their financial institutions to accept card payments. Frankel argued that merchants are unable to promote less costly payment options because financial institutions offer customers various incentives to use payment options that are more expensive to merchants.¹⁷

figures for PIN-based and signature-based payment cards, Mann concluded that PIN-based payment cards were more secure. He argued that weak authentication procedures are a main factor driving fraud. He noted that PIN-based payment cards are not generally accepted for card-not-present transactions, where fraud rates are significantly higher. However, implementation of recent technological advances, such as microchip and biometric authentication systems, should enhance fraud prevention. Mann also noted that the legal and regulatory framework protects consumers differently based on the type of payment instrument used to make purchases and often consumers may not be aware of such differences. He stressed such differences should be addressed by policymakers.

promote cash substitutes in closed-loop environments including mandating their use. Moreover, he noted that these systems may eventually extend to nontransit-related purchases and pointed to the Octopus card, a contactless payment chip card used for mass transit, which is currently used by 95% of Hong Kong residents.

The success of the Octopus card in a closed-loop environment and its expansion into the open-loop, nontransit environment, where it competes with other alternatives such as cash and payment cards, was discussed by Eric Tai, chief executive officer of Octopus Cards Limited. The Octopus card, which was created by five major transportation companies in Hong Kong and was introduced to the public in 1997, uses radio frequency identification (RFID) technology. Today, there are over 8 million transactions daily with more than 12 million cards in circulation. In addition to its primary use for mass transit, the Octopus card is accepted at over 300 merchants, including fast food restaurants, grocery stores, and other cash-intensive merchants. One obstacle to greater use is the current 25% cap on the share of nontransit-related purchases to total card purchases set by the Hong Kong Monetary Authority.

Tai explained that open systems, where consumers can choose from a range of payment options to pay a diverse set of merchants, are much harder to penetrate because a significant number of retailers and consumers must simultaneously be convinced of the benefits of the new payment product. He mentioned various incentives that consumers and merchants are offered to increase their card usage. Some examples include lower merchant fees to new retailers for the first couple of years and loyalty rewards to consumers.

Tai noted that the Octopus card has broader uses than merely payments. For example, the card can be used to gain access to schools and to track the attendance of students. If a student does not check in, an SMS (short message

Price incentives have been successful in motivating consumers to use cash alternatives.

Brown countered Frankel's position by arguing that both consumers and merchants have benefited from the widespread acceptance of credit and signature-based debit cards. He noted that credit card consumers have benefited from lower finance charges and annual fees along with additional enhancements. In addition, Brown stated that merchants benefit from wider card acceptance and increased payment volumes because card payments are replacing less efficient cash and check payments. He argued that these benefits are directly tied to the collection of interchange fees. He stressed that the revenue from interchange fees is necessary to promote the efficiency and safety of the system. Furthermore, investment in fraud reduction technologies resulting in lower fraud rates would not have been possible without sufficient revenue from interchange fees. In 2004, Visa's global fraud rates were below seven basis points.¹⁸

Mann focused on the differences in fraud prevention systems between payment types. Comparing fraud rate

While panelists disagreed about the pricing of some payment services, most of them agreed that payment cards are superior to cash and checks in general. Specifically, Frankel questioned the underlying incentives for consumers and businesses to adopt more costly and less secure card-based payment instruments instead of less costly and more secure ones. Brown countered that consumer and merchant benefits from credit and signature-based debit cards outweigh the costs borne by consumers and merchants. The panelists agreed that fraud is a major issue. Mann argued that although the payment card networks have generally extended the minimum required consumer protections, differences in statutes governing different payment instruments should be harmonized.

Incentives keynote address

Richard Porter, senior policy advisor and vice president, Federal Reserve Bank of Chicago, observed that the transportation service industry is often able to provide sufficient incentives to

service) message is sent to the parents to inform them that their child is not in school. The card also can be used to check out library books and warn parents of emergencies.

Cash substitution

Although the adoption of general purpose cash substitutes for low-value transactions remains slow, panelists provided examples of cash alternatives with differing levels of success for certain payment niches.¹⁹ The second panel of the conference featured Leo Van Hove (moderator), associate professor, Free University of Brussels; Scott Okun, I-PASS manager, Illinois Tollway; Richard Lautch, vice president and treasurer, Starbucks Coffee Company; Barbara Straw, program director, Navy Cash Card, U.S. Navy; and Volker Koppe, marketing director, GeldKarte, EURO Kartensysteme GmbH. The panel addressed methods currently in use to encourage cash substitutes. Price incentives, for example, have been successful in motivating consumers to use cash alternatives.

Van Hove claimed that the “war on cash” is a popular theme in Europe, although users perceive cash as a relatively cheap means of payment.²⁰ He argued, however, that cash has a higher social cost than some electronic alternatives. Social costs are defined as the sum of real resource costs.²¹ If cost-based pricing, where all participants pay their share of the cost to use a type of payment, were adopted, Van Hove argued that consumers and merchants would use the most efficient payment methods.²²

Okun presented Illinois Tollway’s cash alternative for toll collection. Tollway users are able to pay their tolls with RFID transponders, called I-PASS transponders, which are most often connected to credit cards, allowing drivers to avoid stopping at most tollbooths. I-PASS users must start with a balance of \$40 in their accounts. The users are able to replenish their accounts automatically with a credit card when their accounts fall below \$10. Unlike the Hong Kong mass transit system, the Illinois Tollway

did not eliminate cash collection altogether at the point of sale. However, beginning in 2005, tollway auto drivers paying with cash are charged twice the I-PASS user price. As a result of this pricing incentive, transponder payments increased from over 50% of tollway transactions in December 2004 to slightly above 70% in early 2005. In addition to the benefits to tollway drivers from direct cost savings and reduced travel times, society as a whole benefits from the reduction in negative externalities associated with roadway congestion.

Lautch argued that Starbucks is not at war with cash because many electronic alternatives are still relatively expensive for small-ticket-item merchants. The cost of accepting cash for Starbucks is about one-third of the cost of accepting credit and signature-based debit cards. Starbucks does not accept PIN-based debit cards because the per-transaction cost is higher for small-ticket purchases than that of other electronic alternatives. Today, general purpose payment cards account for one-fifth to one-quarter of Starbucks’ transactions. Based on internal forecasting models, Lautch predicted this number to increase to between 40% and 45% within the next five years.

In addition to accepting general purpose payment cards, Starbucks introduced its own cash alternative, the Starbucks card, in 2001. Lautch estimates that over 60% of Starbucks card purchases are made by gift card recipients. Despite its success as a gift card, purchases made on the Starbucks card only represent about 15% of quarterly revenue during the holiday season. Starbucks’ main benefits from card usage include increased customer loyalty and transaction speed.

The U.S. Navy’s card-based system, Straw explained, eliminates the use of cash on all outfitted ships. The Navy Cash card, similar in size to a credit card, has a microchip and a magnetic stripe. On equipped ships, the crew uses the microchip embedded on the card for all purchases while on board, including those made at vending machines.

Straw noted that the elimination of bills and coins reduced the Navy’s costs of accepting payments, while Navy personnel benefited from the improved accessibility and safeguarding of funds. For example, the adoption of the Navy Cash card eliminated the cost of collecting and counting 16,000 quarters daily from the sale of 8,000 cans of soda on an aircraft carrier with a crew of about 5,000.

While the microchip on the card operates as an e-purse on ship, the dual magnetic stripe allows Navy personnel to make purchases wherever MasterCard PIN-based debit cards are accepted. Navy personnel can choose to allocate payroll funds between their bank accounts and the e-purse application housed on the microchip. Currently, 66 ships are equipped with this card-based system; the Navy plans to implement this system on approximately 160 ships.

Finally, Koppe described GeldKarte, a German general purpose chip-based e-purse solution. The e-purse resides on more than 60 million cards accounting for about 70% of all debit cards in circulation. Alternatively, e-purses may also be issued as a stand alone payment device. Given residents of Germany generally exhibit a high preference for cash transactions, the banking system created an e-purse application to replace these transactions. Koppe observed that GeldKarte especially benefits merchants that have small-ticket items, particularly at unmanned locations, e.g., vending machines, parking meters, and transportation services. However, only 5% to 10% of e-purses issued are used for purchases. Of the active cards, Koppe stated that on average, each card is used about five times a month. Nonpayment information can be stored on the card similar to the Octopus card. GeldKarte’s new secure chipcard operating system (SECCOS) provides several predefined applications approved by the German banking industry. For example, the card can store electronic tickets for public transport, bonus points, and digital signatures. Furthermore, the card can authenticate the age of buyers, which prevents minors from making

age-restricted purchases, an application that will be mandatory at many cigarette machines in the near future.

A few conclusions can be drawn based on the experience of the cash substitute systems discussed in this panel. First, providers of these cash alternatives offer benefits beyond those afforded by cash. In some cases, consumers are even penalized for using cash. Second, success of many of these systems is based upon eliminating cash transactions from a closed environment. Third, once critical mass is achieved, the cash alternative can be expanded to other payment and nonpayment uses. In some cases, the new closed-loop environment cash alternative is housed on a general purpose payment card like the Navy Cash card.²³ Such a strategy is in contrast to the European context, where financial institutions emphasize the issuance of general purpose stored-value payment instruments like the GeldKarte. However, cash substitutes are less likely to replace established payment mechanisms when competing payment instruments continue to exist as evidenced by the relatively limited usage of the GeldKarte, the Starbucks card, and the Octopus card for nontransit purchases.

Corporate payments

Historically, businesses have been more reluctant to abandon paper-based payments than consumers partly due to the high level of automation and standardization of business flows that may be required to fully capture the benefits of electronic payment alternatives.²⁴ The third conference panel provided a diverse set of perspectives on the challenges and opportunities for corporations to migrate to electronic payments. Panel members included Cathryn Gregg (moderator), partner, Treasury Strategies, Inc.; Felix Rodriguez, Jr., vice president and treasurer, Illinois Tool Works, Inc. (ITW); Andrea Klein, vice president, Oracle Corp.; James Greene, vice president, Cisco Systems, Inc.; and George Thomas, executive vice president, The Clearing House Payments Company.

Gregg noted that the migration to electronic payments for businesses requires a holistic view of the financial supply chain. Traditionally, business-to-business check payments contained valuable information that was easily conveyed through paper-based processes. While businesses generally agree that electronic payment alternatives could incorporate all the necessary information, they have not been able to create an efficient information-exchange payment platform that has been widely adopted.

Rodriguez said that ITW, a highly decentralized company with a large number of independent business units, still sends and receives just under 60% of its total payments by check. He stressed that, other than for payroll, electronic payment alternatives do not offer additional benefits to individual business units. However, electronic payments account for a little over 80% of the total value of payments, partly reflecting that most intracompany transfers are made electronically. Rodriguez stressed that if checks are meeting the needs of suppliers, electronic payment alternatives may not be necessary for all business payments that a firm makes.

Klein stated that businesses typically run into obstacles coordinating electronic payments with other businesses due to the preference for customized solutions. She argued that the last mile—embedding and distributing the appropriate business-related information with the financial information through the entire supply chain—is the most difficult. Emphasizing the need for standardization and simplification, Klein referred to the example of an anchor tenant, who can establish a standard in its industry because of its influence over its trading partners' payment choices. She noted that some corporate payment standards do exist, but the standards may be customized to a specific industry and may not be interoperable across industries.

Greene countered that multiple standards may be acceptable if the specific industry can find a way to translate them

into a common platform. The growing influence of RosettaNet, a standard-setting body for supply chain management processes, and the increased usage of electronic data interchange (EDI) demonstrate that standards are starting to proliferate in the corporate payments environment. He suggested that companies should take an active role in developing solutions for their payment flows rather than being passive. However, he cautioned that corporations should remain flexible and adaptive.

Thomas disagreed with Greene arguing that minimum standards for remittance data should be established. Thomas stressed that ACH credit payments, where the payor instructs its financial institution to send payment to the payee's account, are preferred to ACH debit payments, where the payor must give the payee permission to debit its account. Whereas ACH debit payments may be returned because of insufficient funds, ACH credit payments are not made unless the funds are available. Thomas highlighted the use of the universal payment identification code (UPIC) as a promising step toward defining a standard for the exchange of remittance data that enables greater use of ACH credit payments. UPIC allows payees to receive ACH credit payments without releasing their financial account information. In addition, this initiative significantly alleviates concerns by payors about sharing their financial information, potentially increasing the number of electronic transactions.

In the end, most panelists agreed that intermediate steps are helping businesses gain confidence to move toward a more electronic financial supply chain. Although the migration has been gradual, many businesses continue to realize the gains from such a migration. Most panelists also agreed that financial institutions and solution providers are making progress toward understanding businesses' reluctance to adopt electronic payment alternatives and are being more proactive in developing solutions.

Regulation keynote address

Mark Olson, governor, Board of Governors of the Federal Reserve System, observed that check usage is declining. He also discussed two recent technological innovations to check processing, the truncation of checks to ACH transactions and check imaging. In 2004, more than one billion checks were converted to ACH payments. While the use of authorities granted by the Check 21 Act has been measured to date, Olson predicted that the use of substitute checks and electronic check images for presentment will serve as an important intermediate step in the transition to electronic payment alternatives.

Olson discussed the core principles of changing the legal and regulatory framework to address more adequately the

new payment services, setting industry rules and operational standards, and providing consumer protections. He stressed that the Fed through dialogue and leadership will continue to facilitate private-sector efforts to improve the payment system.

Check substitution: End-users' perspectives

The fourth conference panel consisted of David A. Balto (moderator), partner, Robins, Kaplan, Miller & Ciresi, L.L.P.; Denis Bouchard, director, Wal-Mart Stores, Inc.; Paul Tomasofsky, president, Two Sparrows Consulting, L.L.C.; James Pittman, senior director, BellSouth Corporation; and Sergio Gargurevich, director, PHH Mortgage Company. The panelists discussed the importance of payment strategies for their companies;

debit cards, this cost savings will likely erode in the future. Bouchard predicted that a convergence of PIN- and signature-based debit card rates would result in lower cost savings. Contingent on potential legal restrictions, Bouchard recommended that merchants consider creating their own low-cost payment mechanism.

Tomasofsky provided an overview from the perspective of merchants and billers. He suggested that most merchants are unable to be proactive about their payment strategies because they are less able to negotiate fees with payment providers. He praised the payment card associations for taking on the challenge to provide better fraud protection for merchants, yet he noted that online merchants would still prefer to improve authentication and risk-management systems. He stated that merchants would like to build better reward programs to gain customer loyalty and market intelligence. He also said that billers would like to differentiate prices based on the payment instrument used but are unable to do so because of contractual agreements. Finally, Tomasofsky noted that some service providers, such as transportation service providers, would benefit from chip-based cards.

Pittman added the perspective of a biller that offers an array of payment options to its customers. BellSouth received 158 million payments during 2004 of which 22% were electronic, 13% were walk-in, and 65% were mail-in. Of the electronic payments, around 25% were recurring ACH debit, 30% one-time ACH debit, 27% ACH credit, 16% one-time credit card, and 1% BellSouth branded MasterCard. BellSouth is in the process of converting mail-in checks and draft payments into ACH payments. Their walk-in locations already convert checks to ACH payments. Pittman stressed that BellSouth's payment strategy is a top priority for the company because of its impact on the company's costs, profits, and overall financial performance.

While Gargurevich concurred with the other panelists on the existing challenges

Payment system participants are unlikely to embrace a new payment mechanism unless participants jointly benefit from its adoption.

changing payments landscape. He stressed that new laws and regulations should be clear and effective, while supporting market-based innovations. Furthermore, as distinctions between paper-based and electronic-based payment options become blurred, the legal and regulatory framework should be consistent across different forms of payment. However, he cautioned that fundamental changes to the existing regulatory regimes should not occur without careful study of the potential implications that may result.

Olson concluded by discussing the role of the Federal Reserve in the evolving payments landscape. The Fed's regulatory role is derived from statute and covers certain parts of the payment system, such as interbank check collection and specific consumer rights and protections. He also discussed the Fed's operational role in check clearing and electronic wire transfers. Olson noted that the role of the private sector is growing in all segments of the payment system, including offering

how to influence consumers to use the company's preferred payment mechanisms; and the payment networks and providers' roles in supporting their strategies. In general, the panelists believed that while checks were not a large burden on their businesses, they were not likely to remain the preferred payment choice of customers.

Bouchard stated that check payments at Wal-Mart are decreasing and are being substituted by card payments. PIN-based debit card transactions are the fastest growing, and, according to Bouchard, more secure than credit and signature-based debit cards; plus, PIN-based debit cards provide additional benefits to customers, for instance, the cash back option. However, agreeing with Frankel from the first panel, Bouchard argued that competition in the payment card industry has resulted in higher merchant fees because card issuers promote payment options with higher interchange fees. While Wal-Mart has been successful to some extent in convincing consumers to use PIN-based

in keeping payment costs down, he cited an additional barrier to the adoption of more efficient payment mechanisms: consumer education. Gargurevich expressed that the customer's experience in making payments is often more important to PHH Mortgage than the cost of processing the payment. He argued that education is extremely important for consumers to make rational decisions. Slightly below half of PHH Mortgage's portfolio, made up of loans to customers and institutions, is paid electronically. Gargurevich stressed the importance of staying informed of consumer needs and providing them flexible payment options, while encouraging mutually beneficial payment solutions.

The panelists agreed that customer preferences for certain payment instruments and the underlying payment processing costs are important determinants in their payments strategies. Gargurevich noted that consumers need to be better educated so that they can make more informed decisions about their payment choices. Pittman stated that in addition to offering several electronic alternatives to checks, BellSouth continues to convert checks to ACH payments resulting in lower payment processing costs. Tomasofsky suggested that payment providers should offer value-added services, such as better market intelligence and more targeted rewards programs for firms receiving payment. Bouchard proposed that merchants consider constructing their own payment network to reduce payment costs.

Check substitution: Payment processors' perspectives

In addition to promoting electronic payment alternatives, payment service providers continue to improve the processing of check payments. The Check 21 Act establishes a legal infrastructure using substitute checks as legal equivalents to original checks to accelerate the use of check imaging. Other participants are making use of the ACH infrastructure by promoting check truncation and offering new ACH-based alternatives. The final conference panel brought together processors that shared a diverse

set of perspectives consisting of Peter Soraparau (moderator), executive director, Bank Administration Institute; Steve Ellis, executive vice president, Wells Fargo & Co.; Jeff Vetterick, executive vice president, Endpoint Exchange; Maria Mandler, managing director, Citigroup, Inc.; and Scott Hatfield, president and chief operating officer, Debitman Card, Inc.

Before Soraparau introduced the panelists, he summarized several innovations discussed at the conference. He noted that many applications, such as credit and debit cards, have successfully penetrated the payments market because they enhance consumer convenience. He suggested that RFID payment devices like those discussed earlier in the conference and biometric payment devices might also be used instead of checks in the future.

Ellis stated that electronic payments are the future, and he predicted that checks will eventually disappear. He reinforced the comments made by the corporate panelists with regard to the opportunities for electronic payments to improve overall business processes. Ellis suggested that rather than concerning themselves with different electronic alternatives taking market share from each other, payment processors should focus on providing superior electronic payment products to checks. Three factors will drive the adoption of new business-to-business payment mechanisms: improving the user experience, improving authentication, and improving the analysis of payment flow information for business purposes. While Ellis remarked that the Check 21 Act as a whole improves the payment system, he noted that the end product is still paper based.

Endpoint Exchange is a check processor that improves check processing by investing in image exchange. The company plans to increase its market share by capturing check volume from those processors who are exiting the industry. However, Vetterick stressed that checks are not likely to disappear soon. He claimed that, as check writing

declines, the cost of processing checks goes up—likely pushing more transactions toward image exchange. In addition to lower transportation costs and faster processing that result from the Check 21 Act, he stressed that there are fewer physical touch-points in the Check 21 world, resulting in more efficient and secure processing.

Mandler stated that a key driver in improving the payment system is the Check 21 Act. She stressed that check imaging increases the speed of payment processing while providing businesses cost-saving opportunities. Nevertheless, she argued that moving consumers and merchants to electronic payments would ultimately lead to even more efficient payment processes. Citing a Federal Reserve study, she observed that while electronic payment transactions made through ACH networks accounted for less than 20% of the total volume, they accounted for close to 80% of the total value, suggesting that electronic alternatives like ACH payments are particularly attractive to consumers and businesses that pay and receive larger value payments.

Hatfield began his remarks by stating that banks control the debit card industry. To increase competition, he recommended an innovative payment mechanism that challenges the existing infrastructure. Debitman created a retailer-issued PIN-based ACH debit card that offers lower merchant processing fees and gives back part of the revenue to the issuing retailer. He stated that banks currently have the upper hand—silencing merchants and leaving consumers ignorant of the many issues in the payment system.

While panelists generally agreed that improvements to check processing, such as conversion to ACH payments or exchange of check imaging, are steps in the right direction, the migration to electronic payments will result in more efficient payment processes. In the interim, improvements to the processing of checks further increases the efficiency of the payment system until consumers and businesses fully migrate to electronic alternatives. ACH

payments are likely to grow, especially for higher-value business payments and point-of-sale and remote consumer payments.

Conclusion

In his concluding remarks, Sujit Chakravorti, senior economist, Federal Reserve Bank of Chicago, noted that many new payment innovations, such as general purpose stored-value cards, electronic business-to-business payment platforms, check imaging technology, and online payment platforms, offer potential benefits to payment system participants. However, payment system participants are unlikely to embrace a new payment mechanism unless participants jointly benefit from its adoption. Often incentives are required to spur

adoption. During the migration to electronic payment mechanisms, improvements to the traditional paper-based payments will likely increase the efficiency of the payment system if a sufficient number of consumers and businesses continue to make paper-based payments.

Several speakers stressed that payment system participants may differ in their preferred payment choice. For example, several merchants and billers noted the relatively high fees for general purpose card payments. Some speakers suggested that consumers may not face the proper incentives to migrate to more efficient payment mechanisms. On the other hand, others argued that the more costly payment options offer greater merchant acceptance and utilize sophisticated fraud detection systems.

Finally, some speakers addressed the need to revisit the regulatory and legal payment infrastructure as technological advancements affect the payments environment. Although many speakers viewed the Check 21 Act favorably, most thought of it as an intermediate step toward an electronic payment system. Some speakers noted that more consistency between payments laws and regulation is necessary as differences between payment processes become more blurred. In the end, the migration to more efficient payment mechanisms is critically dependent upon the incentives that payment participants face and the underlying legal and regulatory framework in place.

¹ A condensed summary of this conference was published as Sujit Chakravorti and Carrie Jankowski, 2005, "Innovations, incentives, and regulation: Forces shaping the payments environment," *Chicago Fed Letter*, Federal Reserve Bank of Chicago, No. 218a, September. This longer article, along with other articles summarizing the conference, will be published in the October/November 2005 issue of the *Journal of Payment System Law*. The authors thank Carol Clark, Alan Frankel, Christian Johnson, Volker Koppe, Victor Lubasi, Julie Murray, Dick Porter, Tara Rice, and Leo Van Hove for comments on previous drafts.

² Federal Reserve System, 2004, *2004 Federal Reserve Payments Study*, Washington, DC, December. For an in-depth analysis of payment instrument usage trends in the United States, see Geoffrey R. Gerdes and Jack K. Walton II, 2005, "Trends in the use of payment instruments in the United States," *Federal Reserve Bulletin*, Spring, pp. 180–201.

³ For a discussion of the underlying incentives for a significant number of U.S. consumers, merchants, and financial institutions to continue to embrace check payments, see Sujit Chakravorti and Timothy McHugh, 2002, "Why do we still write so many checks?," *Economic Perspectives*, Federal Reserve Bank of Chicago, Vol. 26, No. 3, Third Quarter, pp. 44–59.

⁴ The anonymity feature of cash is an attractive feature to some cash users that is difficult to replicate in most electronic payments.

⁵ For examples of cash alternatives being accepted by traditionally cash-only merchants, see Jathon Sapsford, 2004, "Paper losses: As cash fades, America becomes a plastic nation—Even state troopers accept credit and debit cards; McDonald's capitulation—A swiper for church donors," *Wall Street Journal*, July 23, p. A1.

⁶ American Bankers Association, 2003, "Consumers now favor credit and debit over cash and checks as payment for in-store purchases," press release, Washington, DC, December 16.

⁷ Note that for payment process innovations, not all payment participants need to be on board. For example, check conversion to automated clearing house (ACH) payments or the exchange of check images instead of original checks does not require transactors to necessarily change their payment behaviors. However, if the payment innovation changes the interface for transactors, its acceptance by the transactors is critical for market adoption.

⁸ For details about the market penetration rates for general purpose cash substitutes in Europe, see Leo Van Hove, 2004,

"Electronic purses in Euroland: Why do penetration and usage rates differ?," *SUERF Studies*, No. 4, July.

⁹ Examples of closed-loop environments include university campuses, military bases and ships, and mass transit systems.

¹⁰ The substitute check defined in the Check 21 Act is required to contain images of the front and back of the original check; a magnetic ink character recognition (MICR) line that includes all of the information in the MICR line of the original check; and the statement, "This is a legal copy of your check. You can use it the same way you would use the original check." It should also have the ability to be processed in the same way as the original check. For more information on the Check 21 Act, see the Federal Reserve System's site on the Check 21 Act at www.federalreserve.gov/paymentsystems/truncation/default.htm.

¹¹ The 2003 Chicago Fed Payments Conference focused on the current payment infrastructure being able to adapt to changing payment requirements for end-users. For more details, see Sujit Chakravorti, Thomas Ciesielski, Carol Clark, and Erin Davis, 2003, "Can existing payment networks meet future needs? A conference summary," *Chicago Fed Letter*, Federal Reserve Bank of Chicago, No. 194, October.

¹² For a discussion of characteristics of successful innovations, see Sujit Chakravorti and Emery Kober, 2005, "Why invest in payments innovations?," *Journal of Payment Systems Law*, Vol. 1, No. 4, June/July, pp. 331–353.

¹³ In the United States, there are two types of debit cards: PIN-based and signature-based. PIN-based transactions generally require personal identification numbers (PINs) to authenticate payors, whereas signature-based cards are generally authenticated by the payors' signatures. For online bill payment, certain billers are accepting PIN-based debit cards without a PIN.

¹⁴ Generally, merchants are not contractually allowed to impose surcharges for credit card and signature-based debit card purchases. For a summary of pricing restrictions that merchants have faced in the United States, see Sujit Chakravorti and Alpa Shah, 2003, "Underlying incentives in credit card networks," *Antitrust Bulletin*, Vol. 48, No. 1, Spring, pp. 53–75.

¹⁵ However, later in the conference, Richard Lauth from Starbucks noted that for small-ticket purchases, PIN-based debit cards were more expensive than signature-based debit cards, implying that transaction size affects the merchant's cost of accepting card payments.

¹⁶ Financial institutions generally receive higher interchange fees for credit and signature-based debit cards than PIN-based debit cards.

¹⁷ For more details about Frankel's view, see Alan Frankel and Allan Shampine, 2005, "House of cards: The economics of interchange fees," *Antitrust Law Journal*, forthcoming. For a summary of the economic literature that studies the underlying incentives for the payment card industry, see Sujit Chakravorti, 2003, "Theory of credit card networks: A survey of

the literature," *Review of Network Economics*, Vol. 2, No. 2, June, pp. 50–68.

¹⁸ For details regarding Visa's fraud prevention measures, see Visa International, 2005, *Securing Payments: Building Robust Global Commerce*, San Francisco: Visa International, available at www.corporate.visa.com/md/dl/documents/downloads/SecuringPayments.pdf, accessed on August 3, 2005.

¹⁹ General purpose stored-value cards can be used to make purchases at many types of merchants as opposed to limited purpose cards that can only be used at a few types of merchants. For a discussion of the necessary conditions for the substitution of cash by general purpose stored-value cards, see Sujit Chakravorti, 2004, "Why has stored value not caught on?," *Journal of Financial Transformation*, Vol. 12, December, pp. 39–48.

²⁰ The war on cash also exists in the United States. See Howard Wolinsky, 2005, "Credit-card industry's 'war on cash'," *Chicago Sun-Times Online*, August 8, available at www.suntimes.com/output/business/cst-fin-card08.html, accessed on August 8.

²¹ Economic welfare analysis would compare social benefits minus social costs among payment alternatives to determine the most efficient payment mechanism. The most efficient payment mechanism may be different depending on the payment market segment. While ACH payments may be preferred for recurring payments where the payee is able to punish the payor—as in the case of a utility company possibly turning off service if the payment is declined by the payor's financial institution—credit cards may be preferred for remote nonrecurring payments where the payee would benefit from payment authorization procedures and potential third-party payment guarantees.

²² For a discussion of cost-based pricing, see Leo Van Hove, 2004, "Cost-based pricing of payment instruments: The state of the debate," *De Economist*, Vol. 152, No. 1, pp. 79–100.

²³ Starbucks also promotes its own cash alternative as an add-on feature of its co-branded general purpose credit card known as the Duetto card.

²⁴ The 2004 Chicago Fed Payments Conference focused solely on business-to-business payments. For a summary, see Sujit Chakravorti and Erin Davis, 2004, "An electronic supply chain: Will payments follow?," *Chicago Fed Letter*, Federal Reserve Bank of Chicago, No. 206a, September.

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