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Innovations, incentives, and regulation: Forces shaping the payments environment

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The migration to more efficient payment mechanisms is affected by innovations, incentives, and regulation. While advances in technology have yielded numerous payment method alternatives, many have not been widely adopted. A recent Chicago Fed conference explored why certain payment innovations have been more successful than others.

Numerous payment innovations have not been widely adopted because many payment system participants lacked sufficient incentives to change their behavior.

While the migration from paper-based to electronic payments in the United States is occurring faster than before, cash and checks continue to be used for a significant number of transactions. A recent survey showed that while the number of electronic payments in the United States reached 44.5 billion in 2003, the number of check payments remained substantial at 36.7 billion.[1] In addition to promoting the substitution of electronic payment alternatives for checks, various payment processors are encouraging the presentment of electronic check images and the conversion of checks to automated clearing house (ACH) payments. Furthermore, cash transactions continue to decrease as a proportion of the total number of in-store purchases.[2]

Three main forces continue to affect the migration to more efficient payment mechanisms: innovations, incentives, and regulation. Advances in technology have resulted in numerous payment method innovations. However, many have not been widely adopted because many payment system participants lacked sufficient incentives to change their behavior. Also, as the payment system evolves, policymakers should continue to reevaluate the existing legal and regulatory infrastructure and, where appropriate, reduce barriers inhibiting the widespread adoption of efficient payment mechanisms.

To foster a dialogue on these topics, the Federal Reserve Bank of Chicago hosted its fifth payments industry conference, titled "Innovations, Incentives, and Regulation: Forces Shaping the Payments Environment," on May 18–19, 2005. This *Chicago Fed Letter* summarizes participants' responses to the following 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?

Innovations keynote address

In his introductory remarks, Charles Evans, Federal Reserve Bank of Chicago, observed that the increase in online purchases has led to some innovative payment solutions. One such solution is provided by PayPal, a wholly owned subsidiary of eBay. Jeff Jordan, PayPal, stated that over 900 million people are using the Internet, many of them to buy and sell goods and services accounting for $236 billion in 2004. He estimated that over 500,000 U.S. residents make a part or all of their income selling products on eBay.

Jordan recalled that an early obstacle to eBay's growth was the processing of payments. For extremely small businesses, traditional electronic payment alternatives were often cost prohibitive. Instead of creating a new payment network, PayPal provided merchants with access to existing, familiar networks, such as ACH and payment card networks. 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. Today, PayPal's loss rates are around 26 basis points, well below the over 100 basis points experienced in the fall of 2000.

The evolving payments landscape

The first panel discussed developments in the provision of payment services, including their costs and benefits to end-users as well as their differing legal protections against fraud losses. While the panelists disagreed about the pricing of some payment services, they generally agreed that payment cards are more efficient than cash and checks. This panel featured Oliver Ireland (moderator), Morrison and Foerster, L.L.P.; Thomas Brown, Visa USA, Inc.; Ronald Mann, University of Texas School of Law; and Alan Frankel, Lexecon, Inc.

Ireland stressed that gaining market adoption is a major challenge in the migration to efficient payment mechanisms. This can be particularly difficult considering the deep emotional attachment of consumers to more traditional payment forms, e.g., checks in the United States. Frankel argued that there are incentives that make U.S. consumers and businesses more likely to adopt less efficient and less secure payment instruments, such as credit and signature-based debit cards, instead of more efficient and more secure ones, such as personal identification number (PIN)-based debit cards.[3] Brown countered that credit card consumers have gained from these incentives, like frequent-use rewards, and merchants have benefited from increased payment volumes as card payments are gradually replacing cash and check payments.

Mann focused on the differences in fraud prevention systems among payment types. He argued that weak authentication procedures are a main factor driving fraud. Comparing fraud rate figures for PIN-based and signature-based debit cards, Mann agreed with Frankel that the former were more secure. Mann also noted that the legal and regulatory framework protects consumers differently based on the payment instrument used to make purchases, and stressed that such differences should be addressed by policymakers.

Incentives keynote address

Eric Tai, Octopus Cards Limited, discussed the success of the Octopus card, a contactless payment chip card used for mass transit, which is currently used by 95% of Hong Kong residents. The Octopus card was issued by five major transportation companies in Hong Kong in 1997 and is the only type of payment accepted. Today, the number of daily transactions is more than eight million with over 12 million cards in circulation.

Besides being used for mass transit, the Octopus card is accepted by over 300 merchants, including fast food restaurants and grocery stores. 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. He mentioned various incentives offered to merchants and consumers to encourage the use of the Octopus card, e.g., lower fees to new retailers and consumer loyalty rewards. In addition to being used as a payment instrument, the Octopus card can be used for other purposes such as school attendance and access to restricted areas.

Cash substitution

Although the adoption of general-purpose cash substitutes for low-value transactions remains slow, panelists discussed examples of different payment niches where cash alternatives were introduced with varying levels of success. This panel featured Leo Van Hove (moderator), Free University of Brussels; Scott Okun, Illinois Tollway; Richard Lautch, Starbucks Coffee Company; Barbara Straw, U.S. Navy; and Volker Koppe, EURO Kartensysteme Gmb-H. Incentives to move consumers to cash substitutes were a primary focus. 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. Consumers perceive cash as a relatively inexpensive means of payment because they do not fully bear the cost of using it. He argued that cash, in fact, has a high social cost, suggesting society would benefit if electronic alternatives substituted for cash transactions. If cost-based pricing were adopted, Van Hove argued, consumers and merchants would use more efficient payment methods.

The U.S. Navy's card-based system, Straw explained, eliminates the use of cash on all outfitted ships. While the microchip on the card operates as an e-purse, used for all purchases made on ships, the dual magnetic stripe allows Navy personnel to make purchases anywhere MasterCard debit cards are accepted. Unlike in the Navy Cash Card System, the Illinois Tollway did not prohibit the use of cash. Okun described how tollway users are able to pay their tolls with radio frequency identification (RFID) transponders, called I-PASS transponders, allowing them to avoid stopping at most toll booths. Beginning in 2005, tollway drivers paying with cash are charged at least twice the I-PASS user price. As a result, transponder payments increased from over half of tollway transactions in December 2004 to over 70% in early 2005. In addition to various other benefits, the elimination or reduction of cash collection lowered the U.S. Navy's and the Illinois Tollway's costs of accepting payments.

In addition to accepting general-purpose payment cards, Starbucks introduced its own cash alternative, the Starbucks card, in 2001. Despite its relative success, Lautch said, purchases on the Starbucks card only represent about 15% of quarterly revenue during the holiday season. Currently, a fifth to a quarter of Starbucks' purchases are made with signature-based debit and credit cards. However, the coffeehouse chain does not accept PIN-based debit cards because the per-transaction cost is too high for small-ticket purchases.

Koppe described GeldKarte, a chip-based e-purse solution in Germany that is housed on either bank-issued debit cards or stand-alone cards, which is accepted by a diverse set of merchants. Koppe explained that GeldKarte especially benefits merchants with low-value purchases, particularly at unmanned locations. The card can also be used to authenticate the age of buyers, preventing minors from making age-restricted purchases such as cigarettes. However, only 5% to 10% of e-purses issued are used for purchases.

Corporate payments

Historically, businesses have been more reluctant to abandon paper-based payments than consumers. The next 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), Treasury Strategies, Inc.; Felix Rodriguez, Jr., Illinois Tool Works, Inc. (ITW); Andrea Klein, Oracle Corp.; James Greene, Cisco Systems, Inc.; and George Thomas, The Clearing House Payments Company. Most panelists agreed that financial institutions and solution providers are making progress in developing electronic payment solutions.

Gregg noted that the migration to electronic payments for businesses requires a holistic view of the financial supply chain. While businesses generally agree that electronic payment alternatives could incorporate all necessary information traditionally conveyed through paper-based payments and related documents, they have not been able to create an efficient, widely adopted information-exchange payment platform. Furthermore, Rodriguez argued that a movement to electronic payments is not necessarily beneficial for all business transactions. He 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.

Klein stated that businesses typically run into obstacles coordinating electronic payment transactions with other businesses due to the customization that they seek. She emphasized the need for standards and simplification. Greene suggested that multiple standards may be acceptable if a specific industry is able to translate them into a common platform. Thomas disagreed, arguing that a single standard needs to be formed around the common information that all businesses want to convey. He pointed to the use of the Universal Payment Identification Code (UPIC) as a promising step forward. UPIC promotes ACH credit transactions, where payors can send funds without knowing the financial account numbers of their payees. Furthermore, using this code significantly alleviates payees' concerns that exist if financial account information must be released widely to potential payors in order to facilitate electronic payments.

Regulation keynote address

Mark Olson, Board of Governors of the Federal Reserve System, observed that check usage continues to decline. He also noted recent innovations to check processing, such as check conversion to ACH payments and the presentment of substitute checks subject to certain guidelines specified in the Check Clearing for the 21st Century Act (the Check 21 Act). In 2004, more than one billion checks were converted to ACH payments. While the use of authorities granted to banks 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 legal and regulatory principles needed to address the changing payments landscape. He emphasized that new laws and regulation should be clear and effective, while supporting market-based innovations. Olson agreed with Ireland from the first panel that the role of the private sector is growing in all segments of the payment system. 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 panel consisted of David Balto (moderator), Robins, Kaplan, Miller & Ciresi, L.L.P.; Denis Bouchard, Wal-Mart Stores, Inc.; Paul Tomasofsky, Two Sparrows Consulting, L.L.C.; James Pittman, BellSouth Corporation; and Sergio Gargurevich, PHH Mortgage Company. The panelists discussed the importance of payment strategies for their companies. In general, the panelists thought that checks were not a large burden on their businesses but were not likely to remain their customers' preferred payment choice. While the panelists agreed payment costs were an important issue, they noted that their customers' preferences toward certain payment instruments should not be ignored.

Bouchard stated that check payments at Wal-Mart are decreasing and being replaced by card-based payments, of which PIN-based debit card transactions are the fastest growing. According to Bouchard, these transactions are more secure than credit cards and signature-based debit cards and cost less for most merchants to accept. Wal-Mart continues working to convince consumers to use PIN-based debit cards instead of signature-based ones. However, Bouchard said that cost advantages to merchants accepting PIN-based debit cards may erode in the future because there will likely be a convergence of PIN- and signature-based debit card merchant fees. Tomasofsky stated that merchants would like to focus attention on building better reward programs to gain customer loyalty and market intelligence. He also said that billers would like to differentiate their prices based on the payment instrument used, but are generally unable to do so because of contractual agreements.

Besides various electronic options offered to customers, BellSouth is converting many of its customers' check payments to ACH payments. Pittman stressed that BellSouth's payment strategy is a top priority because of its impact on the company's overall costs. While Gargurevich agreed that keeping payments costs down is a big challenge, he added that educating consumers is extremely important for them to make rational payment choices. Gargurevich highlighted the significance of staying informed of consumers' needs and providing flexible payment options, while encouraging mutually beneficial payment solutions.

Check substitution: Payment processors' perspectives

In addition to promoting electronic payment alternatives, payment service providers continue to improve the processing

Michael H. Moskow, *President;* Charles L. Evans, *Senior Vice President and Director of Research;* Douglas Evanoff, *Vice President, financial studies;* David Marshall, *Vice President, macroeconomic policy research;* Richard Porter, *Vice President, payment studies;* Daniel Sullivan, *Vice President, microeconomic policy research;* William Testa, *Vice President, regional programs and Economics Editor;* Helen O'D. Koshy, Kathryn Moran, and Han Y. Choi, *Editors*; Rita Molloy and Julia Baker, *Production Editors.*

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of check payments. With the passage of the Check 21 Act, the legal infrastructure is in place to substitute paper reproductions of original checks as legal equivalents to original checks.[4] Other participants are taking advantage of the ACH infrastructure by promoting check truncation and offering new ACH-based alternatives. The final panel brought together processors that shared a diverse set of perspectives consisting of Peter Soraparu (moderator), Bank Administration Institute; Steve Ellis, Wells Fargo & Co.; Jeff Vetterick, Endpoint Exchange; Maria Mandler, Citigroup, Inc.; and Scott Hatfield, Debitman Card, Inc. While the panelists generally agreed that current improvements to check processing represent a step in the right direction, they concurred that the migration to electronic payments will eventually result in more efficient payment mechanisms.

Soraparu noted that many applications such as credit and debit cards have penetrated the payments marketplace because they are more convenient for consumers to use. Hatfield remarked, however, that banks control the debit card industry. Debitman created a retailer-issued PIN-based ACH debit card that offers lower merchant processing fees than traditional debit cards. To increase competition, Hatfield suggested that new and innovative payment mechanisms need to challenge the existing infrastructure.

More generally, Ellis noted that processors should focus on providing superior electronic payment products to checks. Ellis also stated that electronic payments will eventually replace checks. Although Ellis criticized the fact that the end product of the Check 21 Act is still a paper item, Ellis and Mandler remarked that this Act would be a key driver in improving the payment system. Moreover, Mandler stressed that moving consumers and merchants to fully electronic payments would lead to more efficient payment processes. On the other hand, Vetterick took the position that checks are not going to disappear soon. Nonetheless, he thought that as check usage declines, the unit cost of processing checks will increase, likely pushing more transactions toward more cost-effective image exchange.

Conclusion

In summarizing the conference, Sujit Chakravorti, Federal Reserve Bank of Chicago, focused on the three main forces shaping the payments environment: innovations, incentives, and regulation. Many new payment innovations 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 or disincentives are required to spur adoption. In the long run, most speakers agreed that consumers and businesses will benefit from the shift to electronic payments. In the interim, payment processors may choose to convert paper-based instruments to electronic ones, resulting in more efficient processing.

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

[1] Federal Reserve System, 2004, *2004 Federal Reserve Payments Study*, Washington, DC, December.

[2] 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.

[3] In the United States, there are two types of debit cards. PIN-based debit transactions generally require PINs to authenticate payors, whereas signature-based transactions are generally authenticated by the payors’ signatures.

[4] 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.