Published by the Payment Cards Center, providing meaningful insights into developments in the payment card industry.

AFTER THE HYPE
e-COMMERCE PAYMENTS GROW UP

A workshop forum co-sponsored by

The Payment Cards Center of the
Federal Reserve Bank of Philadelphia

and the

Electronic Commerce Payments Council of the
Electronic Funds Transfer Association

June 18, 2003

Summary: *On June 18, 2003, the Payment Cards Center of the Federal Reserve Bank of Philadelphia and the Electronic Commerce Payments Council (eCPC) of the Electronic Funds Transfer Association co-hosted a workshop forum to explore areas of mutual interest related to the proliferation of e-commerce payments. This was the second event jointly sponsored by the groups. The first forum, "The Future of e-Commerce Payments," which was held in June 2002, focused on the possibilities ahead, as various electronic payment channels displace paper checks as a primary payment form. The more recent forum, "After the Hype: e-Commerce Payments Grow Up," continued the dialog, emphasizing recent economic and marketplace realities that impact e-commerce payments innovation, acceptance, and maturation.*

Participants and speakers included Federal Reserve staff and industry leaders.

For more information on the Payment Cards Center, please visit www.phil.frb.org/pcc. For more information on the Electronic Funds Transfer Association, please visit www.efta.org.

INTRODUCTION

The Payment Cards Center of the Federal Reserve Bank of Philadelphia and the Electronic Funds Transfer Association's Electronic Commerce Payments Council (eCPC) sponsored their second joint workshop forum on June 18, 2003.

Peter P. Burns, a vice president of the Federal Reserve Bank of Philadelphia and director of its Payment Cards Center, welcomed attendees and introduced William H. Stone, first vice president of the Federal Reserve Bank of Philadelphia, and H. Kurt Helwig, executive director of the Electronic Funds Transfer Association (EFTA). Mr. Stone called the beginning of the 21st century "a unique time in payments" and emphasized the considerable progress made toward a payments system that is less dependent on paper instruments. He further emphasized the importance of meetings such as this to promote interaction among payments industry participants. On behalf of the EFTA membership, Helwig expressed appreciation to the Payment Cards Center for its hospitality and continued support of joint educational efforts.

Burns launched the day's presentations highlighting the goal of the Payment Cards Center to stimulate dialogue and informed policy debate through shared knowledge and insights.

Highlights of the speakers' presentations follow.

KEYNOTE ADDRESS: CHECKS, ELECTRONICS, AND THE CHANGING PAYMENTS LANDSCAPE

Richard R. Oliver, Senior Vice President and Retail Payments Product Manager, Federal Reserve Bank of Atlanta

Rich Oliver, whose role as retail payments product manager at the Federal Reserve Bank of Atlanta places him in the forefront of the Fed's involvement in payments, presented the keynote address and set the stage for the day's discussions on checks and electronic displacement. Oliver's remarks focused on the diminishing role of the check, the shift to electronic payments, and the impact of these trends on retail payment systems.

An Evolution in Slow Motion

According to Oliver, modern payments have had an "amazing history," moving forward "slowly and surely in ways no one could have predicted." He credited the 1973 Atlanta Payments Project, a point-of-sale consortium organized by Atlanta banks, Georgia Tech, and the Federal Reserve Bank of Atlanta, with popularizing the term "checkless society." During the next 20 years, government and the private sector invested heavily in the payments system infrastructure to facilitate migration to the checkless society or, at least, to the less-check society. Despite these substantial investments to wring paper from the payments system, check volume, it appeared, continued to soar. Industry pundits claimed that 65 billion checks were written in the U.S. in 2001, up 140 percent from the number reported in the last reliable study, conducted in 1979 by

the BAI, ABA, and the Federal Reserve System. Lacking any other credible source, the pundits' check volume estimate—and the irony of its substantial increase—was universally accepted.

Fed Market Research Establishes New Base

Motivated by the need to understand the foundation on which its $750 million check processing business was built and to assess the growth of electronic payments, in 2001 the Federal Reserve System sponsored a number of related studies that used statistically valid methods to determine the number of checks written in the U.S. and the size and patterns of electronic payments growth.

The check-focused study set check volume at 42.5 billion for 2001, 35 percent lower than previously believed. Oliver noted that officials initially did not believe the study because of the large variance with the "accepted" number of checks processed. The lower number was corroborated in a number of ways, however, which led the Federal Reserve to evaluate the effect of declining volume on its check processing operations. In February 2003, the Federal Reserve announced that it would reduce its check service operating costs through a combination of streamlining the check management structure, reducing staff, decreasing the number of check processing locations, and increasing processing capacity in other locations. The changes are expected to reduce operating costs for check services by about $300 million over the next five years.

The electronic payments study estimated volume at 30 billion transactions per year, with debit card volume growing 25 to 30 percent per year and ACH volume growing 15 percent per year.

The Federal Reserve has committed to repeating the check volume and electronic payment studies every three years to better inform payment industry participants and ensure that it has current information on which to base its own decisions.

Further Displacement of Checks by Electronic Payments

Oliver suggested that additional declines in check processing are likely, with the following initiatives holding the greatest potential for check displacement:

- Check conversion. Check conversion, although probably an interim technology, holds tremendous potential for reducing paper check processing.[1] In particular, lockbox conversion products could "attack" the remittance check market, which currently accounts for approximately 14 billion checks, or 35 percent of checks written. POS conversion, the process of scanning checks at merchant locations and converting them to

[1] Check conversion or check electronification is a relatively new payment process. The merchant uses a terminal that reads the MICR encoding on consumer checks presented at the point of sale and instantly converts them into electronic payment messages. The resulting "converted checks" travel though an electronic payments system as debits, eliminating paper handling. At the conclusion of the tender, the merchant returns the voided checks to consumers. Please see the Payment Cards Center's "Conference Summary: Innovation at the Point of Sale," February 27, 2003, for more information on check conversion.

ACH debits, also holds substantial promise, potentially eliminating an additional 8 to 10 billion checks per year.

Despite this potential, check conversion faces a variety of obstacles, such as schedules, applicability to convert corporate checks based on current NACHA rules, higher-than-acceptable rejection rates, and consumer acceptance. These obstacles "are not likely to derail check conversion," since the issues will be worked out in time but they will dictate the pace of change.

The Federal Reserve is actively engaged in check conversion processes. It is participating in a lockbox pilot with financial institutions in the West and with the Treasury Department (check conversion at the point of sale).

- Check 21. Within the next 12 to 18 months, the Check Clearing for the 21st Century Act (Check 21) will enable check truncation. The bill recently passed the House with a vote of 405 to zero. The Senate is currently working on its version of the proposed legislation, and passage is expected later this year. Check 21 paves the way for clearing banks, at their option, to truncate checks and replace them with electronic images, thereby avoiding the time and cost of physical check transportation. If the recipient bank does not accept electronic images of truncated checks, the clearing bank is obligated to provide a paper replacement document.

  Although Check 21 originated within the Federal Reserve and is welcomed nearly universally throughout the payments industry, major market participants may be slow to develop enabling strategies. The key issues are how replacement documents will be created, who will handle this process, and at what cost. If replacement documents cost two to four cents per item, are net savings still possible? In addition, implementation may face difficulties based on the cost of enabling infrastructure and the uncertainties of future check truncation volume, which may be diminished depending on the success of check conversion and the continued growth in debit card volume.

- Other ACH-based initiatives. Additional initiatives with the potential to displace paper checks include:

  - Electronic bill presentment and payment (EBPP), which is "being pushed" by both corporations and financial institutions.
  - Same-day ACH, which could improve the business case for check conversion and attract new credit payments.

The relevant question is, "Should we create same-day ACH right now to pick up a day on returns?" Doing so would open the door to new ACH payments and would be attractive in the conversion, lockbox, and credit environments. On the other hand, any type of universal adoption of same-day services would require all depository institutions to 'memo post' items on an intraday basis. At this time, the Fed is working with the industry in considering future opportunities for same-day ACH services.

Payments Convergence: Fact or Folly?

The key issue emerging from the many initiatives to displace checks is "convergence in the payments system," according to Oliver. "On one hand," he noted, "no one wants to build costly new infrastructure when we already have a significant investment in check processing, automated clearinghouse, electronic funds transfer and credit card networks.

"On the other hand," he asked, "how do you make these systems work together efficiently to handle payments that originate at the point of sale?"

Oliver noted that some envision a payments system that includes real-time gross settlement of all electronic items, a model currently employed in some countries with concentrated banking systems. He postulated, however, that such a model will not likely be achieved in the U.S. "in our lifetime" because the following types of questions cannot yet be answered:

- Will the cost of convergence warrant the change? What does it take to move to a real-time system?

- Will revenue protection strategies block change? Check processing is a revenue producer. What happens if returned check revenue dries up?

- Would international ACH payments attack current international payment revenue streams?

- Will managing balances, reserves, etc., become a nightmare? If batches of transactions begin to arrive on an intraday basis, perhaps even late in the day, how will depository institutions manage closing balances?

- Will customer pricing serve as an effective governor? The pricing system isn't in place to drive behaviors required for convergence.

Underlying Issues

Oliver summarized his thoughts regarding the underlying issues that will affect whether payments convergence will become reality, emphasizing potential costs:

- Straight-through processing options will be sought, but they will depend on adoption of key standards.

- End-user pricing must be rationalized to get consumers to change their behavior.

- "Co-opetition" must become a reality to avoid unnecessary infrastructure investment and growth.

- Investments in transition solutions must be minimized.

Oliver asked rhetorically whether the payments industry is faced with running all payment systems ad infinitum and indicated that the answer is not clear.

"Consumers hold the keys to the kingdom," he said, suggesting that end-users will ultimately determine the pace of change and that providers that best understand their needs will be successful.

Closing Thoughts

Noting that no one has all the answers, Oliver suggested that payments system changes will occur at a more modest pace than predicted and advised the audience "not to get caught up in the fervor of the moment."

The dilemma facing the Federal Reserve is restructuring its own huge check processing business in the face of the uncertain path of payments evolution. The private sector faces similar issues regarding how to adapt its infrastructure in the same environment – buy, build, outsource, or in-source?

"Such decisions are important because the implications are never short term," he concluded.

THE INDUSTRY'S CHANGING VIEW OF THE PAYMENTS LANDSCAPE

Michael Mulhern, Partner, First Annapolis Consulting

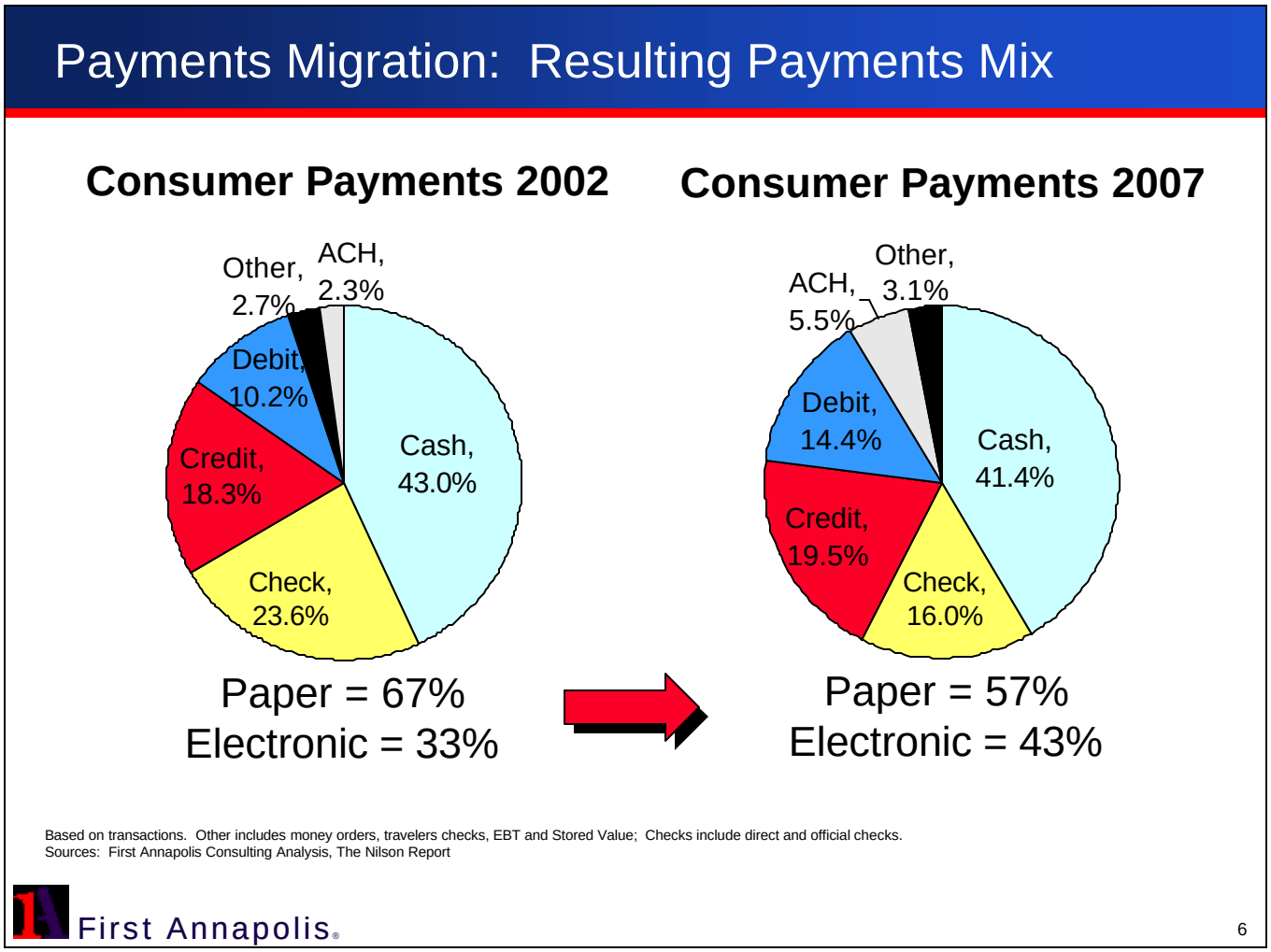
As an industry consultant, Mike Mulhern is an observer of the trends and changes in the payments landscape and the challenges they present for financial institutions. He believes that payments migration is creating a fundamental shift in the industry's revenue, infrastructure, and competition, and that legislative activities have added significant complexity and uncertainty to strategic decision-making and analysis. He suggested that cross-bank strategies and coordinated efforts are required to counter these trends and to seize opportunities.

Payments Are Important to Banks

Payments are a substantial revenue generator for today's banks. Mulhern indicated that First Annapolis's bank clients generate 30 to 50 percent of their revenue from payments. But the payments landscape is changing. Check volume is in decline, since paper-based payments are being displaced by electronic alternatives. As the following chart illustrates, a substantial shift is expected in the consumer payments mix between 2002 and 2007; the most striking change is an estimated 10 percent transposition in the percentage of consumer paper-based payments (cash and checks) and electronic payments.

First Annapolis estimates that by 2007 the U.S. volume of checks will decline between 2 billion checks (assumes 1 percent annual decline) and 8 billion checks (assumes 4 percent annual

decline) – with a greater likelihood of the higher percentage decline. According to Mulhern, this change represents a potential "big threat to a big piece of the revenue pie."



Implications of Reduced Check Volume: Lower Revenue and Increased Expense

Reduced check volume places revenue at risk and potentially increases operating costs. For one top-five bank analyzed by First Annapolis, reduced check volume could mean 68 million fewer *wholesale* checks written and deposited (based on 1.5 percent annual decline) over five years. At 20 cents per check, the bank's revenue would decline $14 million cumulatively during that period. Payment shifts could cost another bank analyzed by First Annapolis one-quarter of its payments revenue and one-third of its margin, based on total payments revenue of $1 billion.

In addition, fewer checks have the potential to increase per unit check processing costs – unless expenses can be reduced proportionately. In 2002, the per unit check processing cost was approximately 6 to 10 cents. Without a reduction in check processing expenses, projected volume decreases will push up per unit costs to 20 cents or more.

Key Trends Affect Margins

According to Mulhern, key trends in payments that have significant potential to affect banks' margins include:

- Migration from cash and checks to electronic payments.
- Migration from high-margin forms of payment (e.g., credit) to lower margin forms (e.g., debit or ACH).
- Challenges to interchange, including legal/regulatory attacks and increasing merchant power.
- Proliferation of new payment forms and their impact on infrastructure investments and standards, servicing requirements, and revenue and risk management.
- Network disintermediation by integrated processors.
- Deployment of ATMs by non-banks, which can dilute volume, and reduce revenue and the value of bank ATM infrastructure.
- Spontaneous nonrecurring payments (e.g., point-of-purchase, Internet, telephone).

What Banks Should Do

Mulhern recommended that banks adopt a payments strategy to proactively address changes in the payments mix. Recommended actions include:

- **Organize.** Secure executive mandate; organize bank-wide payments steering group, appoint a "payments czar," and recruit a payments strategy team with cross-functional representation.

- **Evaluate situation.** Define scope of payments business (including who, where, why, with what, how, and from where/to where) and key issues.

- **Establish performance-improvement plans.** Develop and size potential countermeasures to identify opportunities to generate higher returns. In addition, develop proactive responses to opportunities and identify "quick hits" for early success.

- **Forecast business.** Analyze cross-impacts of trends and countermeasures. Understanding size, margins, potential, and positioning supports good decision-making and will help address key issues such as identifying "core" and "noncore" components.

- **Implement.** Implement optimized strategies and tactics.

- **Formalize process.** Control and refine.

A well-executed payments strategy, according to Mulhern, can deliver material financial gains. Experience suggests that a comprehensive payments strategy can recover 25 percent of potential lost revenue margins by:

- Maximizing payments' short- and long-term contribution to profit.

- Ensuring bank-wide view.
- Eliminating/controlling "siloed" decision-making.
- Anticipating market change and being proactive.
- Allowing for understanding of financial parameters around strategic decision-making.

"Banks can be proactive, but it takes significant commitment and a lot of political capital," he concluded.

THE FEDERAL RESERVE LOOKS AT THE FUTURE OF RETAIL ELECTRONIC PAYMENTS SYSTEMS

Susan Foley, Project Leader, Board of Governors of the Federal Reserve System

In recognition of recent innovations and anticipated developments in payments systems, the Federal Reserve's Payments System Development Committee asked Federal Reserve staff to seek the views of private-sector organizations on key issues that will shape the future of clearing and settlement systems. Susan Foley, who helped conduct interviews of these organizations and drafted a Federal Reserve staff study on the results, presented highlights of these interviews and discussed areas in which the Federal Reserve and other organizations may foster payments system innovation and remove barriers.

Background on Payments Project

The Federal Reserve Board formed the Payments System Development Committee in 1999 to advise the Board and Federal Reserve System officials on medium- and long-term public policy issues surrounding developments in the retail payments system. Consistent with its mission to promote long-term development of payments systems and identify regulatory and operational barriers, the committee requested Federal Reserve staff to conduct an industry analysis to determine key marketplace issues and needs and to ascertain the direction–based on the opinions of various industry sectors–of future innovations in retail electronic payment systems.

Interviews were conducted, largely in fall 2001 and spring 2002, with six to eight organizations from each of the following categories: corporate end-users, technology firms, nonbank service providers, payments processors, banks, infrastructure providers, and others.

The interviews generated 33 recommendations, 22 for the Federal Reserve and 11 for the payments industry in general. Despite the number of recommendations, no systemic barriers to payments system innovation were identified and no single recommendation was made by a significant number of organizations interviewed. Staff members who conducted the analysis noted that innovation is "difficult and complex" and that each organizational category had its own "priorities and constraints."

Interview Highlights

Foley reviewed highlights of the following four interview topics that are of interest to the e-commerce payments community:

- **Online payments from deposit accounts.** A demand exists for a low-cost method to support real-time or near real-time online payments. There are relatively few instruments available for making online payments. Credit cards currently dominate, although merchants complain about fees, which they believe are too high. ACH debit, attractive because of its lower processing costs, is experiencing increased use. However, end-users and processors of ACH debit payments express concern about authenticating and authorizing users, which may hinder further adoption.

- R**eal-time processing, clearing, and settlement.** Industry representatives agree that a faster payment processing is highly desirable, but they disagree about whether payments should clear and settle in real-time, near real-time, or next day, mainly because of the higher costs associated with real-time clearing and settlement. Interviewees also noted the need for faster returns of ACH debits.

- **Standards.** Many interviewees express concern over the lack of broad interoperability across payment instruments and systems, lack of standards, and the lack of cooperation in certain sectors in adhering to standards. One suggestion calls for the Federal Reserve to facilitate standards for electronic payments and encourage vendor cooperation. For instance, the Federal Reserve currently supports 70 electronic check presentment standards but intends to support only one by 2005. It has indicated that it will work with vendors to facilitate the transition.

In addition, many interviewees express concerns about cross-payments systems and instruments. One suggestion calls for the Federal Reserve to develop cross-border file transfer standards.

- **Cross-border payments.** Cross-border payments, especially regarding worker remittance, are receiving increased attention in the press and are becoming a "hot" topic in Washington, D.C. President Bush and President Fox of Mexico have endorsed a joint effort that includes an action item to reduce the cost of remitting payments between the U.S. and Mexico. In general, there is dissatisfaction with current consumer mechanisms, which are regarded as expensive and cumbersome. Interviewees would like the Federal Reserve to develop cross-border services. Currently, the Federal Reserve offers cross-border ACH services to Canada. In the future, the service will be extended to Europe.

Challenges and Opportunities

According to Foley, most payments system innovation "rides the rails" of existing networks and systems, such as those managed by ACH operators, regional EFT networks, and credit card associations. She characterized riding the rails as "first steps," perhaps in recognition

of today's cost-conscious environment, and asked, "How long can we use the same tracks? How long will they be able to adjust to new demands?" Possible improvements suggested by interviewees to facilitate innovation include end-user options on timing, expanded information capabilities, and reapportionment of fees. Foley concluded by stating that above all else, providers of payment systems must find ways to lay the foundation for strategic and incremental enhancements of payment systems to support the evolving needs of commerce.

Additional Information

For additional Federal Reserve payments system information, visit www.federalreserve.gov/paymentsys.htm. For a complete copy of "The Future of Retail Electronic Payments Systems: Industry Interviews and Analysis," visit www.federalreserve.gov/pubs/staffstudies/2000-present/ss175.pdf.

CONSUMER BEHAVIOR AND PAYMENT TRENDS IN THE UNITED STATES

Elizabeth Klee, Economist, Board of Governors of the Federal Reserve System

Using data from the Survey of Consumer Finances, economist Beth Klee examined changes in consumer payment behaviors between 1995 and 2001. She focused specifically on changes relating to the use of electronic payments based on the variables of consumer income, age, and education. Her research provides quantitative evidence of the significant across-the-board impact of electronic payment options on how consumers pay for goods and services.

Aggregate Electronic Payment Data

Klee began her discussion of consumer behavior and payment trends by presenting aggregate electronic payments data for 1995, 1998, and 2001, noting that volume and value had increased substantially during this period.

Electronic Payment Growth: 1995 – 2001

Electronic Payment Form	Transaction Volume[2]	Transaction Value[2]
Debit Card	+700%	+800%
Credit Card	+ 50%	+ 80%
ACH Credit	+100%	+120%
ACH Debit	+125%	+ 45%

Source: Federal Reserve and industry statistics.

Of particular note was the relative increase in debit card (online and offline combined) volume compared with credit card volume. As a percentage of all electronic payment volume, debit card volume increased to 34.9 percent in 2001 from 24.5 percent in 1998; credit card volume as a percentage of all electronic payment volume decreased to 47.9 percent in 2001 from 57.3 percent in 1998.

[2] All figures approximate.

Checks continued to account for a significant portion of noncash transactions. In 2001, checks represented 53.6 percent of all such transactions, compared with 46.4 percent for all electronic payments *combined*. In terms of transaction value, checks dominated even more. In 2001, checks accounted for 66.4 percent of transaction value, compared with 33.6 percent for all electronic payments *combined*.

Consumer Behavior and Payment Trends in the U.S.

Klee continued her presentation, focusing on individual consumer behavior. Her remarks were based on data collected for the Survey of Consumer Finances, which is conducted every three years to track consumers' financial assets and liabilities. She began her discussion by examining changes in use and holdings (ownership) of electronic payment instruments:

Use/Holdings of Electronic Payments Instruments (in percent of families)

Year	Use a Debit Card	Use a Direct Deposit	Use a Direct Payment	Hold a Credit Card			
				Any Credit Card	Bank Card	Retailer Card	Gas Card
1995	17.6	46.7	21.8	74.4	66.4	57.6	24.7
1998	33.8	60.5	36.0	72.5	67.5	50.0	19.2
2001	47.0	67.3	40.3	76.2	72.7	45.2	16.1

Source: Survey of Consumer Finances, Federal Reserve.

Notable are increases in the *use* of debit cards and direct payments, along with, bank credit card *holdings* and decreases in retailer and gas card *holdings.*

Klee then re-examined the use and holdings data, focusing on the variables of income, age, and education.

- **Percentile of income.** When the data were examined based on percentile of income, three patterns emerged and were mostly stable across years:

    - Debit card use rose, then fell with income.
    - Bank card holdings rose with income.
    - Direct payment use rose with income.

    Patterns of direct deposit use, however, changed: In 1995 and 1998, they rose with income, and in 2001, they rose and then fell with income.

- **Age.** Based on age, overall use and holdings increased across all age groups.

    - For some age categories, bank credit card holdings fell from 1995 to 1998 and rose from 1998 to 2001.

- Debit card use decreased with age and direct payment use rose, then fell with age.
- Bank credit card holdings generally rose, then fell with age, but the 55-64 age group had a lower holdings rate than the 65-74 age group in 2001.
- Direct deposit use rose, then fell with age in 1998 and 2001.

- **Education.** Based on education, use and holdings increased across all education groups. In addition, use and holdings increased with education for all payment types and for all years.

- **Income effect or age?** The data suggest two factors contributing to payment choice: income and age. The relative impact of the factors depends on the payment type:

  - Income has a greater effect on bank credit card holdings and direct payment use.
  - Age has a greater effect on debit card use and direct deposit use.

  The above relationships held across all survey years, but the magnitude changed.

Conclusion

Klee summarized the results of her research on consumer payment behavior as follows:

- From 1995 to 2001:

  - Families' use of debit cards and ACH payments grew substantially.
  - Credit card holdings increased moderately.

- In general, growth occurred:

  - Across all income groups
  - Across all age groups
  - Across all education levels

- There was a greater *income* effect for bank credit card holdings and direct payment use, and a greater *age* effect for debit card use and direct deposit use.

e-COMMERCE AT THE UNITED STATES POSTAL SERVICE

Deborah Rouff, Payment Technologies Specialist, United States Postal Service

The United States Postal Service (USPS) introduced debit and credit cards to its payment mix in 1995 as part of an overall effort to better serve its customers and improve cash management of postal funds. From the start, the program was an overwhelming success, spurring USPS to introduce a variety of innovative payments products, attempt to launch an integrated electronic payments platform, and create an online store operation. Deborah Rouff provided the audience with details on USPS's e-commerce initiatives, emphasizing "what works" and "what doesn't" in the postal environment, and shared lessons learned in the process.

Background

Based on measures of assets and sales, USPS is one of the largest retailers in the U.S. and would rank among the top 15 corporations in the world. Driven by congressional mandate, USPS provides universal, economical mail delivery to 130 million locations – a number that is constantly increasing. USPS is self-supporting and owned by the American people. It receives no tax dollars and no government funding.

Debit and Credit Card Acceptance

USPS's first electronic payments applications were credit cards and both signature and PIN debit cards. Approximately 67,000 card acceptance terminals were installed between April 1995 and October 1997 at 33 million post offices nationwide. The launch of credit/debit card acceptance was especially noteworthy because it was the first time in 200 years that USPS had expanded its customer payment options.

Initially, credit/debit cards were accepted for retail and wholesale products, but high interchange costs associated with large commercial bulk mailings and meter settings, in particular, prompted USPS to discontinue accepting cards for wholesale products.

The credit/debit card rollout was the largest national rollout ever undertaken by USPS. According to Rouff, it was accomplished successfully and on schedule. "Customers recognized us as a retailer and welcomed the convenience of an alternative payment method," she said. "And postal retail clerks were pleased with how easy it was to process electronic transactions and liked having less cash in the drawer, the result of accepting fewer cash payments and offering cash back."

Accepting credit/debit cards had a significant impact on USPS's money order business. USPS sells 200 million money orders annually at a value of $30 billion, one-third of the U.S. total. Previously, cash was the only form of payment accepted for money orders; now customers could pay with their PIN-based debit cards.

Consequences of the Program's Success

The Postal Inspection Service deemed the credit/debit card program a success based on improvements to the security of USPS payment methods and the potential to reduce crime based on lower cash holdings at postal facilities. These benefits led to the creation of the Payment Technologies Group to develop and implement new payment technologies and to increase communications among stakeholders.

A "Radical" Decision

According to Rouff, in 1996 USPS's new Payment Technologies Group made a "radical" decision – to adopt an electronic payments strategy targeted at increasing the electronic percentage of retail and wholesale dollars. Reasons for this strategic change included:

- **Customer convenience.** To accommodate the growing preference for electronic payments by a large and expanding number of postal customers.

- **Competitiveness.** To support USPS's image as a retailer.

- **Cash management.** To reduce float, enabling $85 billion in annual cash flow to be available for investment one day faster, and to promote better internal controls, including less cash in drawers.

- **Cost effectiveness.** To reduce cash consolidation fees by displacing cash purchases with electronic purchases and to encourage more online payments, the most cost-effective form of payment for USPS.

USPS Goes Online

During the first quarter of 1999, USPS introduced Internet-based e-commerce with the launch of *Desk Top Post Office*. Its first application, *Mailing on Line*, enabled customers to electronically send a mailing piece to USPS for printing and then fulfillment based on an electronic mailing list. Within three years, *Desk Top Post Office* evolved into www.USPS.com, an enhanced Internet site serving as the gateway to all USPS rate information, products, and services.

Products currently available though www.USPS.com include:

- ***NetPost Mailing Online*.** Create, print, and send resumes, newsletters, and everything in between without printing, stuffing, or making trips to the post office. (Accepts ACH debits for a limited number of customers.)

- ***Click-n-Ship.*** Create labels and pay for postage.

- ***eBill Pay*.** Receive and pay bills online.

- ***Card Store*.** Create and send personal or business greeting cards and business direct mail.

- ***Postal Store*.** Buy stamps and other items online.

- ***Send Money Online*.** Send money or money orders to anyone in the U.S. or worldwide.

Click-n-Ship has been the most popular and fastest growing product. During its first six months of operation, *Click-n-Ship* processed 2.7 million credit card transactions. During the last 12 months, www.USPS.com has processed 4.2 million credit/debit card transactions, representing $170 million in sales.

Rouff reported that fraud losses from retail electronic payments have been low. Internet fraud, however, has grown substantially, especially on orders originating outside the United States. USPS is implementing universal fraud protection measures to address fraud increases in fraudulent activity.

Experimentation with Additional Payment Products

USPS introduced two payment products to further expand the percentage of electronic payments it accepts. For a variety of reasons, each product, described below, was discontinued or will be discontinued after the pilot stage.

- **Postal Payment Card.** Piloted from 1997 through 1999 with 80 business customers, the card offered businesses the convenience of a card-based transaction using a three-day guaranteed ACH debit. The product was well received by users but was terminated because of high transaction costs.

- **Liberty Cash Card.** A reloadable stored-value card in pilot since 1997, the Liberty Cash Card was developed as a payment solution for unbanked individuals. It was adopted, however, by home and small-business users. There are currently 850,000 cards outstanding with nearly $6 million in loaded value. The program will end in September 2003 because it failed to meet revenue-generating expectations.

Although these products were not commercial successes, Rouff indicated that their introduction and discontinuation taught USPS significant lessons about product development and acceptance, most notably the need for effective marketing to gain interest, acceptance, and use.

Ahead of Its Time with the Postal Electronic Payment Platform

Another USPS electronic payments initiative, the Postal Electronic Payment Platform[sm] (PEPP) was created in concept in 1997. The idea behind PEPP was to combine all USPS electronic clearinghouse and wire payments on a unified electronic payments platform, using a single payment reporting system and a single financial institution. The goal was to streamline USPS operations by eliminating overlapping contracts, multiple service providers, and non-integrated payment and reporting systems. An RFP was released to the banking industry in late 1998, but feedback suggested that PEPP was a concept ahead of its time and was abandoned.

Accomplishments at USPS

Despite initiatives that did not make it out of the pilot or concept stage, USPS has made solid gains since adopting its electronic payments strategy. These include:

- **Lockbox.** Check inflows through the USPS national lockbox system have declined from 490,000 to 236,000 between October 1997 and April 2003. During the same period, ACH credit card and debit card usage increased from 2,738 to 180,000 transactions.

- **Credit/debit cards.** USPS is experiencing volume increases of 25 to 30 percent per year as credit/debit cards are replacing check and cash payments and improving both cash management and customer satisfaction.

- **Paper to electronics.** During fiscal year 1999, cash and check payments represented 83 percent of total sales volume (74 percent in a face-to-face environment) compared with 17 percent for electronic payment methods. In early 2003, cash and checks comprise 74

percent of total sales volume (59 percent in a face-to-face environment) compared with 26 percent for electronic payment methods.

Conclusion

Rouff concluded her remarks by noting the dramatic growth of electronic payments at USPS since credit/debit cards were introduced in 1995, but she added, "There is room for significantly more growth."

MOBILE COMMERCE IN THE U.S. AND EUROPE

Dominic J. Morea, Senior Vice President, Encorus Technologies

Mobile commerce, sometimes touted as "the next big thing," is in its infancy, but it has taken hold in Asia and is expanding throughout Europe, where digital micro- and macro-payments are beginning to gain traction. With responsibilities for Encorus Technologies' mobile payment strategy and merchant operations in Europe and the United States, Dom Morea is well informed about the evolution of mobile payments abroad and the potential implications for the U.S. market. He shared his views with the audience.

Mobile Payments Primer

Mobile commerce (m-commerce) is commonly defined as buying and selling goods and services through mobile handheld devices such as cellular phones and personal digital assistants (PDAs). Sometimes referred to as "next-generation" e-commerce, it enables users to leverage the power and reach of the Internet for content and transaction processing without the constraints of a physical connection or a bulky device. Proponents contend that m-commerce holds great potential as an emerging payments option and envision the emergence of a multi-billion global m-commerce market within the next few years. According to a recent Yankee Group report, premium content being delivered over wireless devices is now worth more than $1 billion annually (excluding Japan and Korea).

According to Morea, integration of m-commerce into the payments mainstream is likely to be an evolutionary process, migrating from relatively simple transactions, such as buying a ring-tone using one's phone bill as a payment instrument, to more complex transactions, such as purchasing a physical item using a traditional credit card via a mobile device at the point-of-sale (POS). To set the stage for his discussion, he identified the stages of m-commerce development as envisioned by Encorus Technologies:

- **Phase 1 – Digital commerce.** Ring-tones, wallpaper, graphics, horoscopes, etc.
- **Phase 2 – Unattended micro transactions.** Metered parking, vending machines.
- **Phase 3 – Attended micro transactions.** Quick service restaurant (QSR).
- **Phase 4 – Unattended macro transactions.** Ticketing (events, transportation).

- **Phase 5 – Attended macro transactions.** Large ticket POS (grocery, retail).

The State of European Mobile Payments

Today, m-commerce represents a substantial payments channel in Europe, significantly ahead of the U.S. Morea suggested that m-commerce development in Europe is "late in Phase 1, evolving into Phase 2;" while the U.S. is in the early stages of Phase 1. The difference, he noted, is due in part to the greater proliferation of mobile devices in Europe, including a Web-ready micro-browser, an m-commerce requirement.
European m-commerce programs that have shown initial success include:

- **i-mode Europe.** Originally launched in Japan, where m-commerce seems to have established itself as a viable payments channel and process, i-mode Europe was introduced in late 2002 in Germany, the Netherlands, France, and Belgium–where, at year-end 2002, there were approximately 200,000 users. One million users are anticipated by year-end 2003.

- **Vodafone Live!** This global organization of local operating companies began delivering multimedia services (e.g., Internet surfing, picture messaging, game/clip downloading) in the United Kingdom and Germany in October 2002. It uses a "walled garden" approach (defined as an operator owning both the relationship with the subscriber and the merchant/content provider), with approximately 300 merchants providing content. It has achieved strong consumer adoption in a short time and now includes approximately 1.5 million subscribers.

Despite the relative successes of these European programs, m-commerce still faces significant barriers to reach the next level. These include:

- **Fragmented mobile network operator (MNO) efforts.** Although European operators have exhibited a willingness to cooperate to create standards, m-commerce's nascent state of development and unknown upside potential has led to a "walled garden" strategy for most operators. Further compounded by disparate network technologies in North America, operators here seem to be emulating Europe's position.

- **Co-opetition.** Tension exists among MNOs over the need to cooperate to spur market development and the need to differentiate to establish competitive positions.

- **Regulatory environment.** Current laws in certain jurisdictions stifle innovation.

- **New risk dynamic.** MNOs understand consumer fraud, not merchant fraud.

- **Partner relationship management issues.** There are issues regarding the ability to provision content providers and promote fair/accurate settlement procedures (revenue assurance) to carrier and participating merchants

- **POS technology evolution.** Current POS technology is fairly entrenched and enjoys a longer life-cycle than most mobile technology. To "crack" into POS, mobile technologies

must become compatible with existing POS technologies and processes, which tend to be less complex.

Morea suggested that the key to overcoming these barriers and "igniting the European m-commerce market" is co-opetition, evidenced by the development of a collaborative, industry-driven standard that would enable mobile payments to occur regardless of operator, network, or geography.

Lessons Observed

Key learnings from Europe and Asia from which the fledgling U.S.-based m-commerce industry can benefit include:

- Walled gardens become less important/deteriorate over time.
- The consumer value proposition is more important than the technology used.
- A strong merchant partner value proposition is critical.
- Effective revenue billing, settlement, and partner relationship management (PRM) infrastructure are critical.
- Environmental conditions are key.

U.S. Analysis

"The U.S. is very early in the m-commerce adoption curve, and virtually no expert will take a stand on when m-commerce will take off or when there will be returns on investment," said Morea. "However, the long-term outlook for U.S. m-commerce growth is positive."

One particularly positive signal is the recent formation of the Mobile Payment Services Association, an organization that will facilitate payment transactions by providing branding, settlement, and other support services. The organization, which restricts membership to MNOs, has the potential to become the equivalent of Visa/MasterCard in the mobile environment, according to Morea. In addition, a number of organizations with cross-industry representation–such as Liberty Alliance, the Mobile Payment Forum, Open Mobile Alliance, and PayCircle–are addressing concerns about standards and are committed to standards that promote interoperability of mobile technologies and applications according to the respective organization's charter.

Currently, there are six major MNOs in the U.S.: AT&T Wireless, Cingular, Nextel, Sprint, T-Mobile, and Verizon Wireless. With high concentrations of market share and divergent technologies, cooperation among these organizations is likely to be a major challenge.

Successful early applications and programs in the U.S. will likely:

- Rely on credit cards and existing payment processes.
- Seamlessly integrate with existing POS devices.
- Not rely on a cellular phone call.
- Involve brand name, trusted retailers.

- Achieve popularity at quick service restaurants and gas stations.
- Employ a "one-click" approach.

Dominant m-commerce content in the U.S. market, according to the Yankee Group, will include:

- Information
- Location-based services (e.g., traffic alerts, directions)
- Entertainment
- Gaming services
- Mobile banking

U.S. Summary

Contemplating the status of m-commerce development in the U.S., the current environment, and lessons learned from other markets, Morea concluded by suggesting key factors on which m-commerce adoption in the U.S. will hinge:

- Existing barriers must be minimized or eliminated.
- Market needs will influence ultimate requirements and demand for m-commerce.
- Value-added solutions will boost consumer and merchant adoption.
- Customer experience will be the deciding factor for payment enablers that succeed.

ONLINE FRAUD: THE STAKES ARE RISING

Steven W. Klebe, Vice President – Strategic Alliances, Payment, and Risk, CyberSource Corp.

As vice president of strategic alliances, payment, and risk at CyberSource Corp., Steve Klebe deals daily with merchants, processors, financial institutions, and rules-making organizations that drive the ongoing development of e-commerce payments. He drew on this experience, as well as his long tenure in the electronic payments industry, to address critical issues surrounding online fraud and the steps industry participants are taking to deal with the growing phenomenon. He gave particular emphasis to the challenges faced by online merchants as they attempt to reconcile the gap between the "vision and implementation" of externally developed payer authentication programs.

Situation Update: Internet Fraud

Fraud is a significant and growing problem for merchants that accept payments over the Internet. Klebe reported that CyberSource Corp.'s *Fourth Annual Fraud Survey,* conducted in fall 2002 by Mindwave Reseach, shows that 44 percent of the 400 merchant respondents plan to implement two or more new measures within the next year to keep pace with fraud.[3]

[3] The 400 merchants surveyed were equally divided between CyberSource customers and noncustomers.

Visa and MasterCard Payer Authentication Programs

To meet the needs of a variety of constituencies and to promote the use of their payments products online, Visa and MasterCard have expended considerable effort on programs to authenticate the identities of cardholders using card-based payment products to pay for online purchases. Their first noteworthy effort was secure electronic transaction (SET), a joint effort that produced a highly secure authentication program. However, SET was ultimately abandoned because its complexity added significant overhead to transaction processing and placed an unacceptable burden on online shoppers, requiring the installation of a "wallet" on their PCs.

Drawing on lessons learned from the SET endeavor, Visa announced in late 2001 that it would introduce an authentication program, Verified by Visa, based on 3-D Secure technology. When a cardholder enrolls his/her card(s) in Verified by Visa, he/she picks a password and personal message. When the cardholder initiates an online purchase at a participating merchant, a pop-up window (or frame) secured with SSL is automatically delivered from the card issuer to the cardholder's computer screen, requesting him/her to enter the password provided during the enrollment process. The presence of the pop-up screen, with the personal message selected during enrollment, confirms to the cardholder that the authentication process is legitimate; the entry of a correct password confirms to the card issuer that the cardholder is the rightful owner of the payment card – thereby achieving mutual authentication.

In fall 2002, MasterCard, which previously announced that it was developing its own authentication program, announced that it had licensed 3-D Secure from Visa for the purpose of introducing a Verified by Visa-like program called MasterCard SecureCode. Although MasterCard has not indicated that it is scrapping its proprietary program altogether, many in the industry anticipate an update on MasterCard's position in the near future.

Klebe indicated that Visa claims, as of February 2003, to have 40 million Visa debit and credit cardholders enrolled in Verified by Visa. This includes cardholders who have enrolled their cards individually and cardholders who have been mass pre-enrolled by their financial institutions. While MasterCard got off to a late start, it has mandated that all card issuers participate in SecureCode at a point in the near future.

New Payment Rules and Exceptions

For merchants, the motivation to participate in these payer authentication programs is a potential reduction in chargeback liability. As of April 2003 (in the U.S.), Visa chargeback liability shifts from the merchant to the card issuer when the merchant submits proof that transaction authentication was achieved or attempted using Verified by Visa. (Note: It is *not* necessary for a cardholder to be enrolled in Verified by Visa for the merchant to benefit from the liability shift.) As of yet, MasterCard has not followed Visa's lead in shifting liability from merchants to card issuers for authenticated transactions when the cardholder is not enrolled.

According to Klebe, the Visa/MasterCard authentication programs are gaining traction with merchants. Findings from CyberSource Corp.'s *Fourth Annual Fraud Survey* suggest that nearly 40 percent of merchant respondents have plans "in the works" to participate.

Respondents that were aware of Verified by Visa or MasterCard authentication plans were asked how those programs would affect their further actions:

- **Will you use other screening methods in addition?**
  - 74 percent – Yes for non-Visa/MasterCard transactions
  - 15 percent – Yes for any card brand
  - 10 percent – No
- **How will the new programs affect which cards you accept online?**
  - 91 percent – We will continue to accept Visa, MasterCard, and other cards
  - 6 percent – We will continue to only accept Visa and MasterCard.
  - 3 percent – We will cease accepting non-Visa/MasterCard cards in the future

Source: CyberSource Corp.'s annual fraud survey, fall 2002

He suggested that this percentage indicates strong merchant interest in the programs, but he added that merchants may not understand all of the implications. For example, nuances of Verified by Visa that merchants may not understand include:

- **Card and transaction types not covered.** Procurement cards, recurring billing transactions, split shipments/delayed shipments (unless CAV/AAV and XID are supplied), sales transacted by one-click buy, and transactions that fail authentication.

- **Merchant-based exceptions.** Merchants that are in Visa's fraud monitoring program as a result of their poor fraud control histories *are not* eligible for chargeback protection, *except* for transactions in which the cardholder is positively authenticated. This exception applies during the time merchants are in the monitoring program and for 90 days after they qualify to exit the program.

- **Pop-up window issues.** If the Verified by Visa pop-up window fails (e.g., if cardholders have blocked pop-ups in their online preferences), the merchant faces the choice of denying the sale, prompting for another payment type, or risk being held liable for fraud. An alternative was recently introduced to use frames instead of pop-ups, but according to Klebe, merchants must be diligent and implement programs carefully.

Role of Behavioral Fraud Screening

Klebe reinforced his support of the "spirit and intention" of the card associations' authentication programs, but he advised that merchants should also continue or consider using behavioral fraud screening tools for additional online fraud protection. Such programs combine heuristics, neural networks, and real-time card profiling to enable merchants to make more informed and automated decisions to accept, reject, or review orders. In addition, behavioral fraud screening is compatible with all major credit cards and is effective worldwide.

He emphasized that fraud is a moving target, and until merchants can turn away business from anyone not participating in payer authentication schemes, these programs – while full of potential – are not enough *on their own* to risk the consequences of being assigned to a monitoring program or losing chargeback protection.

Business and Implementation Issues

Klebe advised merchants to understand these key points about the authentication programs in which they participate:

- Payer authentication programs are helpful, but merchants can't be sloppy. Merchants cannot use programs as a license to blindly accept orders.

- Fraud screening is still required to maintain compliance and optimize sales results.

- Consider: potential shift in fraud attacks to card brands not having authentication services.

Conference Sponsors

The Payment Cards Center was established in early 2001 to provide meaningful insights into developments in the payment card industry. It carries out its mission through research and analysis, as well as forums and conferences that encourage interaction among the diverse groups that are stakeholders in the payments system.

Web site: www.phil.frb.org/pcc

The Electronic Funds Transfer Association (EFTA) is a Washington, D.C.-based trade association that provides industry leadership in the advancement of electronic value transfer systems, technologies, and service. Its Electronic Commerce Payments Council (eCPC) provides a forum for exploring e-commerce payments products and issues in an inter industry environment.

Web site: www.efta.org

AFTER THE HYPE: E-COMMERCE PAYMENTS GROW UP

Workshop Forum Speakers

- **Peter P. Burns,** Federal Reserve Bank of Philadelphia
- **Susan Foley,** Board of Governors of the Federal Reserve System
- **H. Kurt Helwig,** Electronic Funds Transfer Association
- **Steven W. Klebe,** CyberSource Corp.
- **Elizabeth Klee,** Board of Governor of the Federal Reserve System
- **Dominic J. Morea,** Encorus Technologies
- **Michael Mulhern,** First Annapolis Consulting
- **Richard R. Oliver,** Federal Reserve Bank of Atlanta
- **Deborah Rouff,** United States Postal Service
- **William H. Stone, Jr,** Federal Reserve Bank of Philadelphia