Technological Innovation in Retail Payments: Key Developments and Implications for Banks

Karen Furst and Daniel E. Nolle*

Office of the Comptroller of the Currency

October 2004

[Forthcoming in the *Journal of Financial Transformation*]

*The opinions expressed in this article are those of the authors alone, and do not necessarily represent those of the Office of the Comptroller of the Currency or the U.S. Treasury Department. The authors would like to thank David Nebhut, Mark Levonian, and Jeffrey Brown for helpful comments.

Technological Innovation in Retail Payments: Key Developments and Implications for Banks

Karen Furst and Daniel E. Nolle
Office of the Comptroller of the Currency

ABSTRACT: The United States still has a heavily paper-based retail payment system compared with many other developed economies, but the shift to electronic payments has been bigger and more decisive than commonly perceived. For the first time ever, check use declined in the mid-1990s, and among electronic payments the adoption of debit cards has occurred at an extremely rapid pace. The purpose of this article is to promote greater awareness of the nature of recent changes in retail payments in the United States, and to explore some of the key implications of those changes for the banking industry. We describe recent trends in retail payments, highlighting the surprising drop in check usage, and consider the impact of changes in retail payments on bank revenue and costs. We conclude that, although banks are likely to realize substantial long-run payments-related improvements in productivity, they face greater-than-commonly-appreciated near-term challenges.

I. Introduction

The stunning advancements in telecommunications and information management in the early-to-mid-1990s profoundly affected the financial services industry. New products such as credit derivatives were developed, access to credit was significantly increased as a result of major improvements in credit scoring and the development of securitization, and new methods of delivering financial services – especially via the Internet – emerged. One aspect of financial services provision that had, prior to this period, remained below most radar screens was retail payments.[1] However, beginning in the early-to-mid-1990s, a growing number of practitioners, analysts, and policy makers began to focus on the importance of retail payments on financial intermediaries' performance, competitive position, and relationships with third party payments services vendors.

A key feature of the retail payments landscape is the long-term shift away from paper to electronic means of payments. Recently, a comprehensive study of retail payments in the United States was published by the Federal Reserve System.[2] The study revealed a startling, and hitherto unrealized change: whereas it had been commonly perceived, and annually reported by the Fed, that check use continued to grow throughout the 1990s (albeit at a progressively slower rate), the new study showed that for the first time ever, check usage actually declined in the mid-

[1] Analysts and practitioners divide payments into "wholesale" and "retail" payments. Wholesale payments consist of very large-value payments, especially interbank payments related to banks' clearing and settlement role. Retail payments include consumer-to-business and business-to-business payments. The major components of retail payments in the United States include cash, checks, credit cards, debit cards, and automated clearing house (ACH) transactions. Unlike the other forms of retail payments, reliable records for the number and value of cash payments are not maintained, and hence exact data on cash usage is impossible to obtain (and even estimates are generally conceded to be of the "ball park" variety). For this reason, most analyses of retail payments focus on noncash payments, a convention we follow in this article.

[2] We (and most others) refer to the Federal Reserve's (2002) *Retail Payments Research Project* as a single study, although it is in fact a series of three closely related studies conducted by the Fed in conjunction with several consulting firms. The component studies are the "Depository Financial Institution Check Study," the "Check Sample Study," and the "Electronic Payment Instruments Study." Gerdes and Walton (2002) is considered an authoritative source for a description and analysis of "the" retail payments study.

1990s. A necessary corollary to this development is that the shift to electronic payments was more dramatic than many had imagined.

These profound changes in retail payments trends are likely to have major implications for financial intermediaries, particularly for banks, which are at the heart of the payment system. The purpose of this article is to promote greater awareness of the nature of recent changes in retail payments in the United States, and to explore some of the key implications of those changes for the banking industry. Section II describes recent trends in retail payments, highlighting the surprising drop in check usage. Section III considers the impact of changes in retail payments on bank revenue and costs. That section concludes that, although banks are likely to realize substantial long-run payments-related improvements in productivity, they face greater-than-commonly-appreciated near-term challenges. Section IV summarizes, and raises a number of payments issues that warrant further consideration by bankers and financial system regulators.

II. Recent Changes in the Retail Payment Landscape

The United States has long been considered unusual among developed economies for its reliance on paper checks, and hence for its proportionately lower use of electronic means of payments.[3] The annual publication by the Bank for International Settlements (BIS) of payment system statistics for the G-10 countries in its "Red Book," considered to be the most authoritative source for such information, ratified the perception of continuing, though slowing, growth of

---

[3] Unless otherwise specified in this article the terms "electronic means of payment" and "electronic payments" refer to credit card, debit card, and ACH payments. Our comparisons of means of payments focuses on the number of transactions, rather than the dollar-value of transactions. For international comparisons of payment systems see Hancock and Humphrey (1998).

check usage in the United States.[4] On the basis of such information, payment system officials, practitioners, and analysts commonly observed that, although U.S. consumers and businesses were steadily increasing the use of electronic means of payment, they nevertheless continued to cling to check usage.

It was therefore a tremendous surprise when, in 2001, the Fed announced the results of its survey of the use of retail payments in 2000.[5] In particular, data on checks showed that compared to previous survey data for 1995, check usage was lower for the first time ever recorded. In subsequent annual editions of the BIS "Red Book" on payment statistics, the Fed re-stated its estimates of check usage for pre-survey years.[6] As Figure 1 illustrates, those restatements show not only a declining trend in check usage, but lower annual totals for each year. From this it is clear that both the magnitude of consumer and business reliance on checks, and the trend in that reliance, had been off by a factor of 25 percent or more.

The improvement in the accuracy of the check usage data has direct implications for our view of electronic payments. These are clearly illustrated in Figures 2 and 3, which focus on the pre-2000 period. Figure 2 shows that there was a greater reliance on electronic payments than had been previously supposed. In particular, whereas the old ("with Original Check Data") perception was that in the late 1990s somewhat more than a quarter of all noncash retail

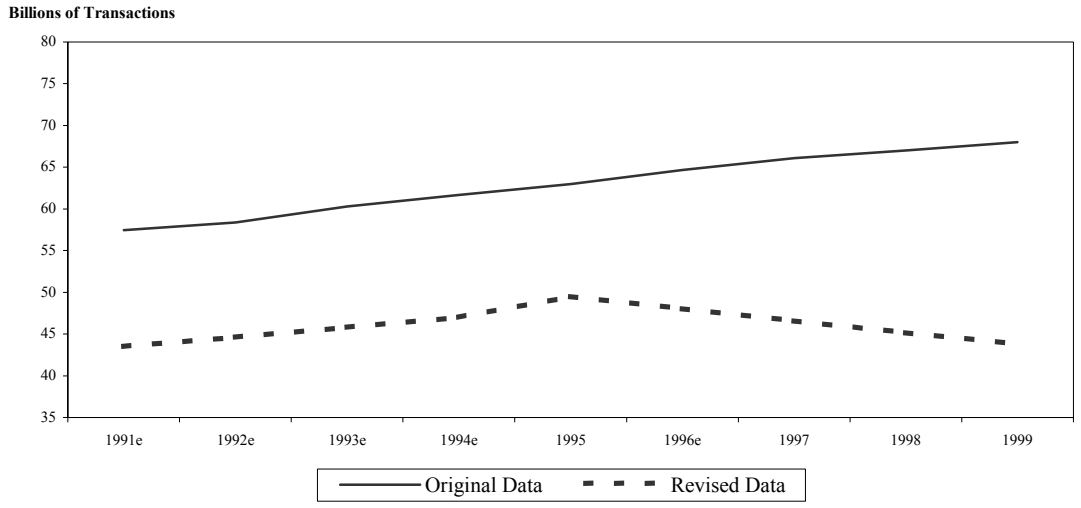
---

[4] *Statistics on payment and settlement systems in selected countries,* Bank for International Settlements. The source for each country's data is its central bank, which of course is the Federal Reserve in the case of the United States. It is important to understand that in compiling annual payment statistics the Fed uses various estimation techniques, and relies on third party sources in some instances, because it is infeasible to get an actual count of all noncash payments transactions (and impossible to get a actual count of all cash transactions). Note that a thorough survey, such as the Fed undertook for 1979, 1995, and 2000, entails expenses that few would argue are justified on an annual basis.

[5] See Gerdes and Walton (2002).

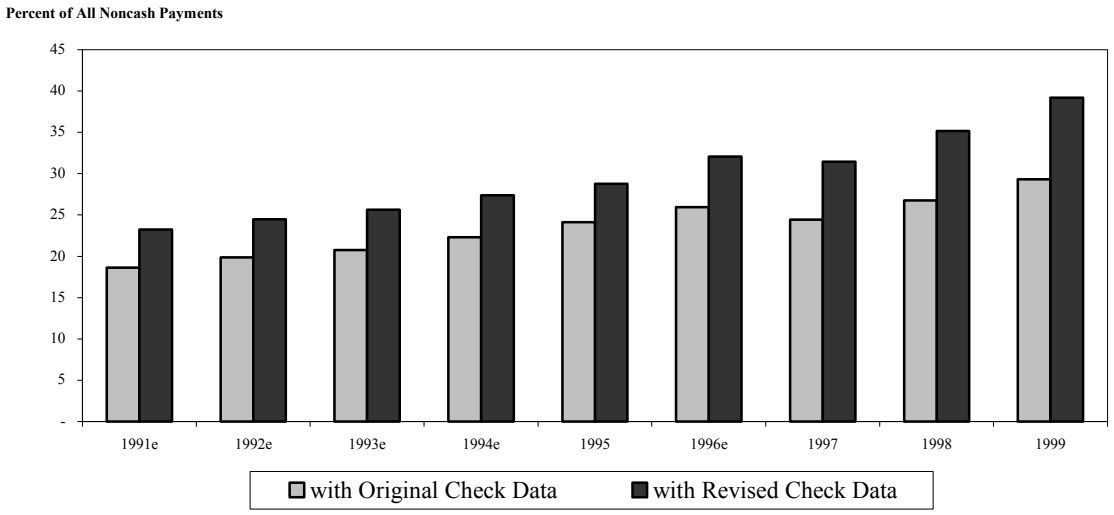
[6] The revisions in the Red Book included data from 1997-2000. To arrive at a revised figure for 1996, we applied the same 3 percent per year estimated decline in check use the Fed used to re-state the 1997-2000 figures. Gerdes and Walton (2002) estimated that, on average, check use grew at a 2.6 percent annual rate between 1979 and 1995, a method we used to generate revised check use figures for 1991-1994.

Figure 1. Changing Perception of Check Usage in the U.S.



Source: OCC using data from *Statistics on payment and settlement systems in selected countries* ("Red Book"), Bank for International Settlements (BIS) (various years).
Note: 1996 "Revised Data" is an estimate consistent with revisions made to Red Book data for 1997-2000 by the BIS. 1991-1994 "Revised Data" are estimates based on the average annual rate of check use growth between 1979 and 1995, as per Gerdes and Walton (2002).

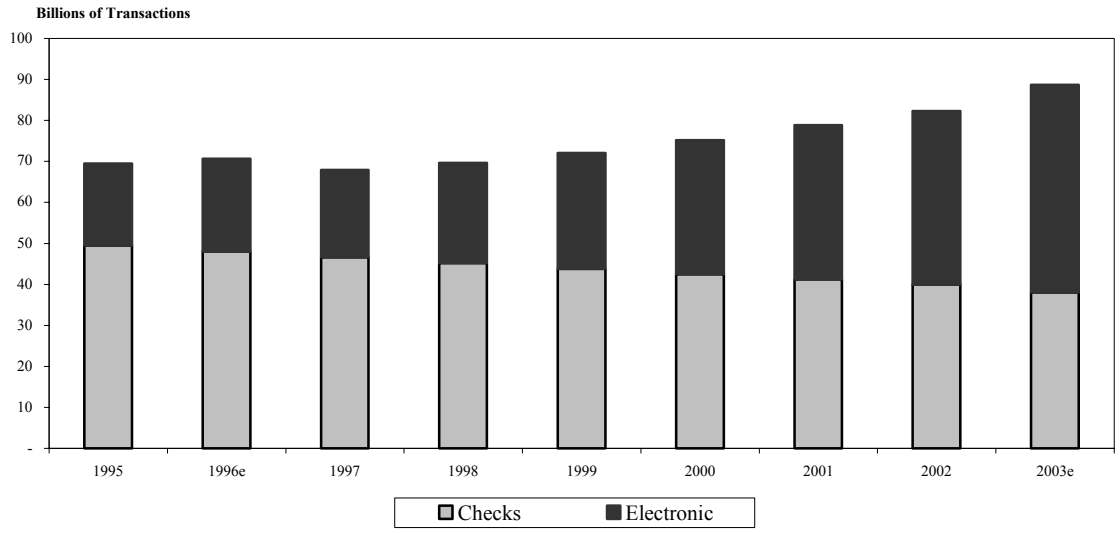
Figure 2. Changing Perception of Importance of Electronic Payments
Electronic Payment Transactions as a Percent of All Noncash Payments



Source: OCC using data from *Statistics on payment and settlement systems in selected countries* ("Red Book"), Bank for International Settlements (BIS) (various years).
Note: 1996 "Revised Data" is an estimate consistent with revisions made to Red Book data for 1997-2000 by the BIS. 1991-1994 "Revised Data" are estimates based on the average annual rate of check use growth between 1979 and 1995, as per Gerdes and Walton (2002).

payments were undertaken with an electronic medium, the true figure ("with Revised Check Data") was closer to 40 percent. Figure 3 shows that for the first time ever, electronic payments actually exceeded payments by check beginning in 2002. In that year 42.3 billion consumer and business payments were conducted via credit cards, debit cards, or the ACH (automated clearing house) system, compared with 40 billion payments via check. Clearly, consumers and businesses have decisively shifted payment patterns toward electronic media.

Figure 3. Electronic Payments Overtake Checks

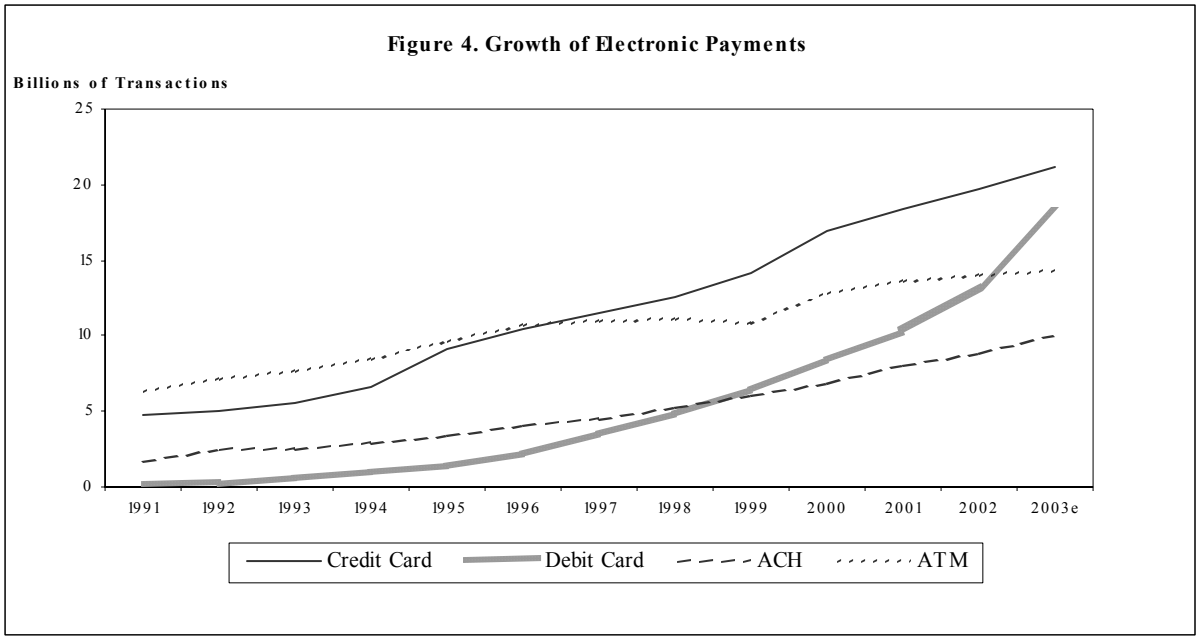


Source: OCC using data from *Statistics on payment and settlement systems in selected countries* ("Red Book"), Bank for International Settlements (BIS) (various years); NACHA; *Card Industry Directory 2004*; and Minehan (2004).
Note: 1996 "Revised Data" is an estimate consistent with revisions made to Red Book data for 1997-2000 by the BIS. For 2003, check use calculated based on estimated trend in Minehan (2004); ACH transactions volume is from NACHA; and credit and debit card volume are from the *Card Industry Directory 2004*.

An important feature of the greater-than-previously-perceived shift from paper checks to electronic payments is the change that occurred in the use of various components – credit cards, debit cards, and ACH transactions – of electronic payments. Figure 4 illustrates trends in credit

card transactions, debit card transactions, ACH transactions and, for comparison, ATM transactions. In the first half of the 1990s these components of electronic payments rose more or less in tandem. Beginning in the mid-1990s however, debit cards, which had been in use since the early 1980s, suddenly surged, overtaking both ACH and ATM transactions.

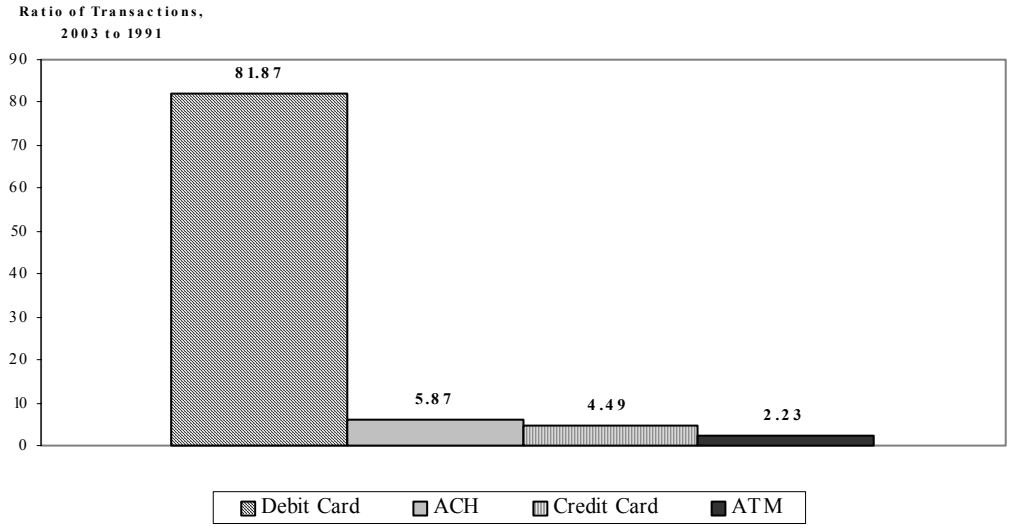
Figure 4. Growth of Electronic Payments



Source: OCC using data from *Statistics on payment and settlement systems in selected countries* ("Red Book"), Bank for International Settlements (BIS) (various years); NACHA; *Card Industry Directory 2004*; and *EFT Data Book – 2004 Edition*.

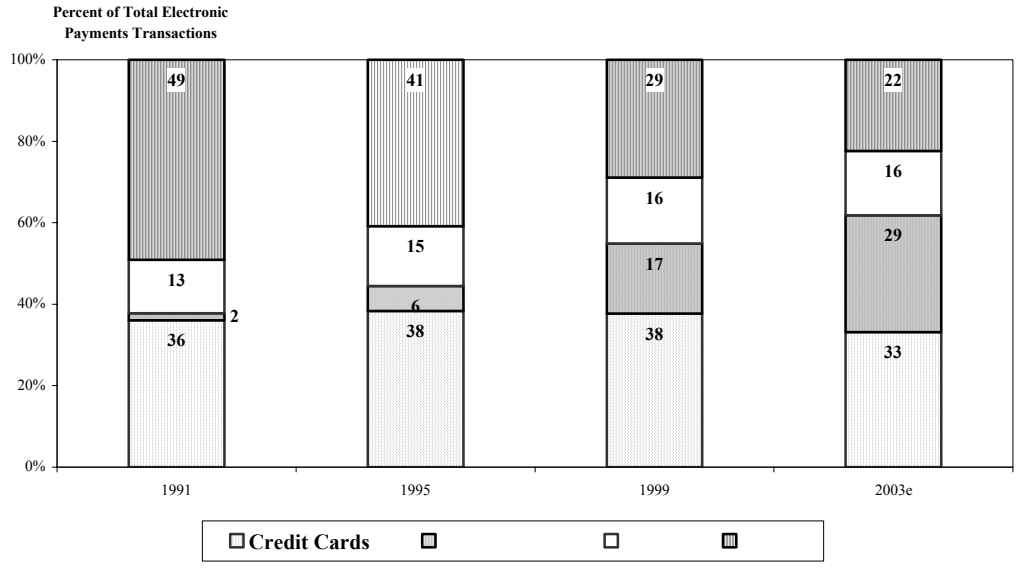
Figure 5 puts the growth of debit card use in perspective, showing that while ATM, credit card, and ACH usage grew substantially, debit card usage increased more than 80-fold over the 1991-2003 period. As a consequence of this change in payment practices, debit cards, which had accounted for only 2 percent of all electronic payment transactions in 1991, rose to 29 percent of electronic payments in 2003, a position rivaling credit card usage (Figure 6).

Figure 5. Proportional Growth Rate of Components of Electronic Payments: Debt Card Use Explodes 1991-2003



Source: OCC using data from NACHA; *Card Industry Directory 2004*; and *EFT Data Book – 2004 Edition*.

Figure 6. Electronic Payments: Shift to Debit Card Usage



Source: OCC using data from NACHA; *Card Industry Directory 2004*; and *EFT Data Book – 2004 Edition*.

III. The Impact of Changing Trends in Retail Payments on the Banking Industry

The greater-than-initially-believed switch away from paper checks to electronic payments has had, and will continue to have, a significant impact on the banking industry. Conventional wisdom holds that advancements in retail payments lower banks' operational costs, making banks better off than they were in the more paper-intensive era. In fact, however, the story is more complex. Although payment system experts consider long-term prospects for improved bank productivity promising, it is far from clear to what extent banks will realize net benefits from changes in retail payment patterns in the near-term.[7] Such a conclusion rests on a consideration of developments on both the revenue and cost sides of banks' retail payment activities.

Banks' Payment-Related Revenue

Traditionally, banks have focused their efforts on deposit taking and lending activities, regarding payment services in the same light as other, less glamorous, "back office" activities. However, for many banks payments activities represent a considerable source of revenue. In particular, Radecki (1999) found that payments constitute between one-third and two-fifths of operating revenue for the twenty-five largest banking companies. Furthermore, for banks of all sizes, payment activities are central to deposit taking and lending relationships.

A large component of payment revenue derives from check processing and checking account-related activities. Such income streams include revenue from cash management services such as processing check payments at the lockbox, interest income from deposit account

[7] On the banking industry's long-term prospects for realizing net benefits from innovations in retail payments see, for example, Minehan (2004).

balances, and fees associated with insufficient funds.[8] Declining check use means this revenue is shrinking and will continue to shrink.

In addition to the decline in check-related revenue, there are several other payments-related forces likely to have a negative impact on payments revenue for banks. First, many of the electronic payments replacing paper checks are lower margin activities for banks. A recent Ernst & Young report rather gloomily concluded

> Although many banks have spent years thinking about and planning for a decline in paper payments, the realization of this phenomenon was still painful…Declining paper volumes were seen for [corporate] controlled disbursements, as well as in check clearing, account reconciliation, and in both retail and wholesale lockbox. While in theory there should be an upside for products such as ACH, EDI, and purchasing cards, the revenue declines seen from paper products are not being offset by the replacing electronic alternatives.[9]

Even among electronic payments, banks are seeing slower growth for those forms of payments – such as credit cards – with relatively higher margins, compared to other forms of electronic payments such as online debit.[10]

---

[8] There is some uncertainty associated with insufficient funds fee. Fees for bounced checks and overdraft fees on checking accounts have become an important generator of low-risk income for some banks. Moebs (2003) cites a March 2003 report by the research firm Celent estimating that fees for bounced checks generated between 25 and 50 percent of all deposit fees earned by U.S. banks. Note that recently such fees have come under attack by consumer groups and under scrutiny by regulators. For example, bounced check fees were the subject of a June 1998 report by the Consumer Federation of America entitled "Bounced Checks: Billion Dollar Profits II." Numerous consumer advocacy groups have expressed their concern about bounce protection programs, including their use as a very expensive form of short-term borrowing. Those concerns are not limited to paper checks. The same groups have urged that financial regulations treat fees charged by banks when an account is overdrawn with an ATM or debit card as an unfair and deceptive practice, on the grounds that no overdraft would have occurred if the bank had declined the transaction. See, e.g., comments submitted by the National Consumer Law Center, Consumer Federation of America, Consumers Union, National Association of Consumer Advocates, and the Woodstock Institute to the Federal Reserve System on the Proposed Amendments to Regulation DD (August 6, 2004). For examples of regulatory responses to the debate, see, e.g., Interagency Guidance on Overdraft Protection Programs, and proposed changes to Regulation DD (which implements the Truth in Savings Act), which were published for comment on June 7, 2004 in the *Federal Register* (Volume 69, No.109 at 31858 and 31760, respectively).

[9] Ernst & Young (2003, p. 4).

[10] In 2003, the volume of credit card and online debit card payments grew at annual rates of 7 percent and 27 percent respectively (see footnote 11 below for an explanation of types of debit card payments). These differing growth rates have a large impact on the revenue of banks that issue the cards, in large part because of differences in "interchange fees" received by the card-issuing banks (see the text above for an explanation of interchange fees).

Second, recent changes in fee structures for electronic payments have had a negative impact on payments revenue for many banks. An important example is the 2003 drop in interchange fees on signature debit card payments (using Visa check card or debit MasterCard), a decline that came about as a result of shifting market forces.[11] The main participants in the market for signature debit card (and credit card) payments are the merchants receiving the payments; "merchant acquirers," which are firms, including some banks, that buy or "acquire" debit and credit card receipts from merchants; card-issuing banks; and the two main card associations, Visa and MasterCard. Merchants sell their card receipts to merchant acquirers at a discount to face value. The size of this discount is largely based on the "interchange fee" merchant acquirers must pay to card-issuing banks to complete the processing of the card payments. In turn, the two card associations are instrumental in determining interchange fees. A series of recent events brought about a shift in the relative market power of these market participants, resulting in a substantial decline in some interchange fees earned by card-issuing banks.[12]

The interchange fee is significantly higher for credit cards than for online debit. For example, on a $75 grocery store purchase, the $0.91 (VISA) credit card interchange fee would be 6 times greater than the $0.15 PIN debit interchange fee (specifically, in this case, via the STAR network). The difference in margin increases as the purchase amount increases, because most PIN debit networks cap interchange between $0.15 to $0.60 per transaction, while VISA interchange is generally a percentage of the purchase amount (generally between 1.2% and 2.6%), plus a fixed fee that is usually between $0.05 to $0.10 per transaction.

[11] There are two ways debit card transactions can be made: the debit card holder can complete a transaction by signing his signature (a so-called "signature" or "offline" transaction), or by using a personal identification number (PIN) at the point of sale (a sometimes referred to as an "online" payment). In general, merchants prefer PIN debit card transactions to signature transactions because interchange fees tend to be significantly lower for PIN debit, ultimately resulting in less of a discount for merchants on the value of the card receipts they sell to merchant acquirers. Note, however, that differences between the two types of debit transactions are narrowing. *The Card Industry Directory 2004* reports that interchange fees typically account for two-thirds or more of a retailer's cost of accepting bank payment cards.

[12] The interchange fees market had been in turmoil for some time, as retailers saw a steady increase in the discount rates to which their card receipts were subject. Many retailers believed these exceeded the major costs of issuing cards and processing transactions that the interchange system was originally designed to cover. Indeed, some retailers thought interchange fees should have dropped substantially, as electronic card transactions replaced paper-based card payments. Wal-Mart and other major retailers challenged the pricing power of the two major card

Finally, banks are not dominating other higher margin payments activities that have emerged as a result of, or received a boost from technological advancements. Chief among such payments activities are money transfer (including especially cross-border remittances), bill payment, payments (such as Pay-Pal) geared to the online market, and expedited late payments. With the exception of expedited late payments, there is one dominant – and nonbank – provider in each of these increasingly important payments market segments.

Money transfer is one of the most important financial services for unbanked consumers and is dominated by nonbank firms such as Western Union (a part of the First Data Corporation) and MoneyGram. Industry analysts forecast money-transfer growth of 18 percent through 2010, with much of this growth coming from remittances, a payment process that enables immigrants to send money from the United States to their home country. Some banks have recently shown a somewhat belated interest in the remittance market, but remain small players. For example, banks handle less than 3 percent of the U.S.-to Mexico remittance market.[13] An indication of the high-margin nature of the money transfer business can be inferred from First Data Corporation's 2003 performance. First Data reported an operating margin of 33 percent, due in part to a 35 percent contribution to First Data's total revenue, and an 80 percent contribution to

---

associations (Visa and MasterCard) in a class-action lawsuit. The lawsuit challenged the card associations' "Honor All Cards Rule" requiring retailers accepting one type of card branded by Visa or MasterCard to accept all cards bearing that logo (i.e., if the store accepted branded credit cards they also had to accept the card companies' branded signature debit card). The parties settled out of court in early 2003; as a result of the settlement, starting in August of 2003 bank issuers of signature debit cards experienced a one-third drop in merchant acquirer-paid interchange fee revenue. Although this decline has been offset somewhat by subsequent increases in interchange fees for signature debit, and by increases on interchange fees for PIN debit card transactions, industry experts estimate that interchange fee revenue has dropped by approximately 20 percent from the pre-settlement level. For a thorough discussion of the pressures on interchange see Giesen (2004).

[13] See, e.g., Porter (2004). His 3 percent figure is based on information from a Pew Hispanic Center report released in June 2004. Note that several large banks, including Citibank, Bank of America, and Wells Fargo are actively marketing remittance services. In addition, First Data's 2003 annual report indicates that its Western Union affiliate is encountering expanded competition from banks and ATM providers, which have begun to target money transfer users with new product offerings.

First Data's Payment Services unit, by its Western Union subsidiary; Western Union has a 75 percent share of the worldwide remittance market, a market in which the average remittance fee is 7 percent of the amount of money transmitted.[14]

The bill payment market is dominated by CheckFree Corporation. CheckFree's electronic commerce division lets customers receive electronic bills over the Internet, pay bills electronically, and make payments not related to bills. The majority of CheckFree's customers access its system through banks, including Bank of America, Wachovia, Washington Mutual, and Wells Fargo. Fees to CheckFree include an average $0.35 charge per transaction for banks that use CheckFree for bill payment and e-bill processing, and an average of $0.81 per transaction charge for banks that fully outsource bill payment to CheckFree.[15] It is noteworthy that even though banks pay CheckFree such fees, an increasing number of banks do not charge their customers for bill payment.

Ebay, the leading online-auction company, purchased PayPal, the leading online payment system, in October 2002. PayPal built its online payment network on the established infrastructure of bank accounts and credit cards. During the second quarter of 2004, PayPal handled $4.35 billion of gross payment volume (a 53 percent increase over the second quarter of 2003), generating $161.5 million in transaction fees. For the second quarter of 2004 PayPal's average transaction revenue rate was 3.64 percent and its processing expenses rate was 1.34

[14] Western Union contributed 35 percent ($2.94 billion in 2003) to First Data's total revenue ($8.4 billion) and accounted for approximately 80 percent of the revenue in First Data's Payment Service unit, which in 2003 had an operating margin of 34 percent.

[15] J.P Morgan Securities (2004).

percent, resulting in a 63 percent margin.[16] Note that the PayPal system has also begun to be used for cross-border remittances.

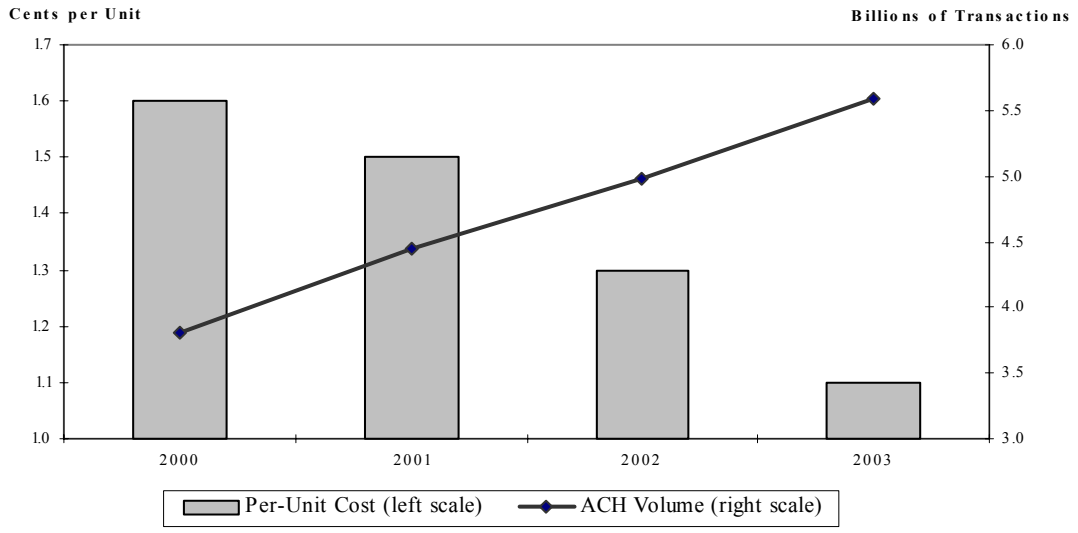
Expedited late payments are generally for last minute transfers by consumers to pay recurring bills. This is a relatively new but rapidly growing market. The expedited late payments market is led by companies such as Western Union and MoneyGram. Other nonbank providers of so-called "walk-in" bill payment services have also entered this market, including American Payment Systems, a provider of walk-in bill payment services to seven million households. Note that American Payment Systems was acquired by CheckFree in June 2004.

Banks' Payments-Related Costs

The common perception is that changing retail payments patterns have been an important positive development on the cost side for banks. There is certainly justification for this view. Electronic payments in general are substantially less costly to process than paper-based payments. For example, Federal Reserve per-item payments processing costs, which are illustrative of industry trends, show that it is almost five times more costly to process a paper check than an ACH transaction. Furthermore, as the volume of electronic payments processed increases, economies of scale and additional innovations are likely to enhance this advantage. In this vein, Figure 7 shows that Federal Reserve System's per-unit ACH processing costs have declined as the volume of ACH payments it handles has increased.

[16] PayPal has recently completed technological innovations and has expanded its product offerings to become a payments provider outside of the online auction market. In particular, it is revamping its sales force to become a payments provider for retailers. Merchants with $100,000 or more per month in PayPal volume pay a 1.9 percent discount fee and $0.30 per transaction. See *Internet Retailer* (2004) and Bliss (2004).

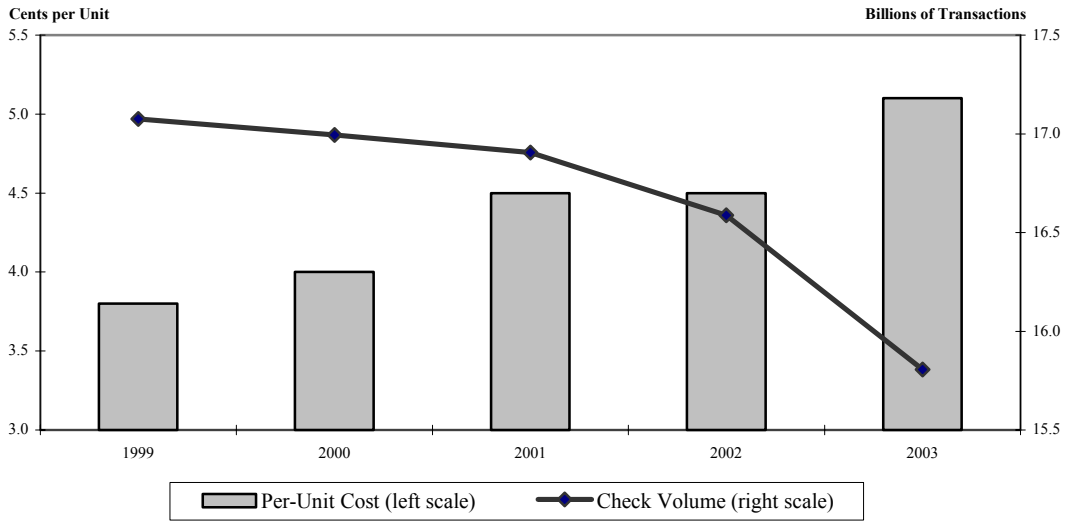
Figure 7. Fed ACH Processing:
Per-Unit Cost Declines as Volume Increases



Source: OCC using data from the Federal Reserve System and NACHA.

However, as with the revenue side of the picture, the story is more complex than commonly appreciated. As a consequence, achieving overall payments-related cost-reductions entails significant challenges for banks. One fundamental factor operating to constrain payments-processing cost improvements is declining scale economies. In particular, as check use declines and the scale of check processing for many banks decreases, the per-unit cost of check processing rises. As Figure 8 shows for example, the Fed has seen a steady increase in its per-unit check processing costs as the volume of checks it processes has declined.

Figure 8. Fed Check Processing:
Per-Unit Cost Rises as Volume Declines



Source: OCC using data from the Federal Reserve System and NACHA

In response to the increasingly unfavorable economics of paper check processing, industry participants have developed technological improvements. "Check electronification" results in substantial cost savings, including of course the elimination of the expense and time of moving paper through the system, but also efficiencies such as lower "back office" costs for researching past payments.[17] Nevertheless, there are substantial cost considerations to take into account even in the case of such technological advancements. These of course include equipment, software, and personnel-training start-up costs for switching to new processes.

[17] Check electronification can be accomplished via two basic routes. In the case of "check conversion" a paper check is used as a source of information at the beginning of the payment process to initiate an ACH transaction. "Check truncation" is the process of stopping the paper during the clearing process, thus eliminating additional physical handling and transportation of the items. Note that the same economic forces that have propelled check electronification have also stimulated significant improvements in the processing of paper checks. See, e.g., Greenspan (2003), and Ferguson (2003).

In addition to the obvious start-up cost considerations, there are two possibly less well-recognized costs of check electronification with which banks must deal. Payment security issues pose important cost challenges for banks. For example, many check fraud protections are currently based on – some even imbedded in – paper checks. Check electronification innovations need to be designed to offer at least a similar level of fraud protection, a process that may entail additional costs. Additionally, it is possible for banks to underestimate payment system upgrade costs because they fail to realize the need to properly integrate paper check and electronic (ACH) processes. In particular, because check and ACH processing systems have not traditionally been linked, it is possible that, when checks are converted to ACH, cash management risk controls in place for paper check processing may be inadvertently bypassed, or stop-payment orders for converted checks may not be acted on. Banks' check electronification cost calculations need to take into consideration the proper integration of check and ACH processing systems

An additional factor on the cost side that will tend to mitigate retail payments-related cost improvements for some banks arises from imbalances in the distribution of costs associated with some forms of electronic payments. Such imbalances may become more onerous as a growing volume of retail payments become electronic. For example, in the case of unauthorized ACH payments, the costs are borne by the receiving bank (the consumer's bank), even though the revenue associated with the payment goes entirely to the originating bank (the merchant's bank).[18] Other ACH-related cost burdens receiving banks may incur without sufficient compensating ACH revenue include compliance costs, for example in connection with consumer

[18] NACHA (an industry group of electronic payment system participants) is working to develop a mechanism to address this disparity by having banks that originate unauthorized ACH debits to accounts pay a return entry fee that will go to the receiving bank.

protection, as well as costs associated with screening cross-border ACH transactions in compliance with OFAC (the Treasury Department's Office of Foreign Asset Control) requirements.[19]

Finally, there is an important strategic issue banks must consider that has both cost and revenue dimensions. Banks have learned that when new service options for customers are added, it is frequently not advisable, or even feasible, to abruptly discontinue older options, even if those options are more costly for a bank.[20] This lesson was most recently learned by banks that successfully integrated Internet banking into their overall operations. In particular, banks with well-established and well-regarded Internet banking operations analyzed customer behavior, and discovered that customers adopting Internet banking still wish to use the bank's other delivery channels, including branches and call centers.[21] The same dynamic holds true for payments: customers shifting to greater reliance on debit cards may still wish to have the option of paper checks, for example. Under these circumstances, banks need to ascertain the most profitable balance between introducing new payment options and maintaining (and, over time, possibly de-emphasizing) older payment options. This balancing act requires making investments in new payment systems, but also continuing to incur costs for maintaining older systems.[22] A corollary

[19] The Federal Reserve's Regulation E covers consumer compliance issues for many types of electronic payments.

[20] See for example Dove Consulting (2004).

[21] In fact, the experience of these banks has been that many Internet banking customers conduct more transactions, across more channels than non-Internet customers, and hence are costly to serve – despite their use of lower cost delivery channels. However, *net revenue* for customers who use Internet banking tends to be higher, because these customers use more high value-added products and services, and because these customers tend to be more "sticky" – that is, they do not tend to leave the bank, in part because of costs (in time and effort) they incur in setting up services such as electronic bill payment, account aggregation, etc.

[22]For example, a May 2004 report by Celent estimates that internal information technology spending on non-card payment systems will grow 37 percent over 2003-2004, more than twice the increase over 2001-2002, and that massive investment in check processing is driving this short-term spike.

is that banks face increased risk-management responsibilities in such areas as security (including fraud detection and prevention) related to all access points and payments options.

IV. Summary and Conclusions

The United States still has a heavily paper-based retail payment system compared with many other developed economies, but the shift to electronic payments has been bigger and more decisive than commonly perceived. For the first time ever, check use declined in the mid-1990s, and among electronic payments the adoption of debit cards has occurred at an extremely rapid pace. These changing patterns of payments may eventually result in substantial payments-related cost reductions for banks, but the story on net – especially in the near-term – is complex and less than completely sanguine.

Payments-related revenue is an important source of income for the banking industry, perhaps more significant than generally appreciated, and payments undergird both deposit and lending relationships for banks. A large part of payments-related revenue comes from check-related activities, and as check use declines this revenue will decline. It is not clear that revenue from increased processing of lower margin electronic payments will fill the gap. In addition, changing trends in retail payments have resulted in significant changes in payment fee structures for banks, including in particular a recent decline in some card-related interchange fees. Finally on the revenue side, nonbanks, rather than banks, dominate markets for some higher margin, non-traditional payments options such as remittances and bill payment, which have received a boost from recent technological innovations.

On the cost side the story is also complex. While electronic payments are far less expensive to process than paper checks, some cost-related factors cut the other way. For

example, as check use declines, scale economies from processing large volumes of checks decline. Even technological innovations in "electronifying" checks entail expenses that must be addressed, including, for example adjusting paper-based security protections. Further, as electronic payments continue to increase in importance, imbalances in cost distribution, for example between ACH receiving and originating banks, take on greater significance and will have to be addressed. Finally, the adoption by banks of new payments services does not necessarily mean that traditional payment options – and their associated costs – can be phased out rapidly.

These changes in retail payments have important implications for banking industry practices and regulatory and supervisory policies. Some of these implications were directly raised in the preceding discussion. For example, banks will face, and must effectively address, new risk management challenges, including misuse and fraud that may follow an increase in the volume and changing production of electronic payments. Other policy questions not raised directly in this article but in need of serious consideration amid the rapid changes in retail payments include the following:

- Given the importance of scale economies in electronic payments processing, will the continual shift toward electronic payments put community banks at an increasing competitive disadvantage relative to large banks?

- Electronic payments are less constrained by distance and political boundaries than paper-based payments. To what extent, and in what respects might the growing use of electronic payments increase the trend toward globalization of large banks' operations? What regulatory and supervisory issues might this raise?

- Nonbank payment system service providers [and other third parties] have gained direct access to the payment system through sponsoring financial institutions. What risk management issues does this raise for the banking industry if the sponsoring financial institutions are not providing adequate oversight of these firms? What competitive, pricing, and supervisory implications arise from banks' growing dependence on a dwindling number of ever-larger nonbank payment services providers?

As our understanding of the nature and scope of changes in the payment system comes into sharper focus, we will be better able to identify and address policy issues arising from changes in retail payments.

References

ATM&Debit News (2003). *EFT Data Book – 2004 Edition*, vol. 3, no. 44 (September 11).

Bank for International Settlements. *Statistics on payment and settlement systems in selected countries* (various issues).

Bliss, Steve (2004). "PayPal Steps Up Its Efforts to Woo Mass Merchants," *American Banker* (May 10).

Card Industry Directory 2004. Thompson Media, 15th Edition (September 2003).

Celent Communications (2004). "IT Spending in Payments at U.S. Banks" (May).

Dove Consulting (2004). "Retaining New Customers: Lessons Learned," *On Payments*, www.doveconsulting.com (August).

Ernst & Young (2003). *20th Annual Cash Management Survey*.

Federal Reserve System (2002). *Retail Payments Research Project.*

Ferguson, Roger W., Jr. (2003). Statement before the Subcommittee on Financial Institutions and Consumer Credit of the Committee on Financial Services, U.S. House of Representatives (April 8).

Giesen, Lauri (2004). "The Future of Interchange," *Digital Transactions.Net,* vol. 1, no.5, (September/October).

Gerdes, Geoffrey R. and Jack K. Walton II (2002). "The Use of Checks and Other Noncash Payment Instruments in the United States," *Federal Reserve Bulletin* (August).

Greenspan, Alan (2003). "Remarks at the Federal Reserve Payments System Development Committee 2003 Conference," Board of Governors of the Federal Reserve System, Washington, D.C. (October 29).

Hancock, Diana and David B. Humphrey (1998). "Payment Transactions, Instruments, and Systems: A Survey," *Journal of Banking & Finance*, vol. 21.

Internet Retailer (2004). "PayPal Gears Up for Its Venture into the Bigger Payments World" (August 5).

J.P Morgan Securities, Inc. (2004). "CheckFree Another Positive Milestone: Wells Fargo Deal Extended," *U.S. Equity Research* (September 15).

Minehan, Cathy E. (2004). "U.S. Retail Payments: Opportunities and Challenges," Federal Reserve Bank of Boston (speech given at Piper Jaffray's Retail Banking Symposium, June 17, 2004).

Moebs, Michael (2003). "Overdraft Protection Can Mitigate Risks, Help Profits," *American Banker* (November 7).

Porter, Eduardo (2004). "Struggling to Draw Workers Sending Money Back Home," *The New York Times* (June 7).

Radecki, Lawrence J. (1999). "Banks' Payment Driven Revenues," *Federal Reserve Bank of New York Economic Policy Review,* July.