

payments system research briefing

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Fees, Fraud and Regulation: Forces of Change in the Payment Card Industry

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The forces of change in the U.S. payments system have never been more plentiful. Payment card fraud is on the rise. Mobile banking is on the rise. Payments through new social media are swelling. Bank regulations have changed. Lines of competition in the payment card industry have been drawn and redrawn.

We took a look at two separate areas of change—crime and competition—in three new articles published in recent issues of the Kansas City Fed's *Economic Review*. One article offers evidence on fraud trends in countries where computer-chip cards have been adopted.¹ And two articles assess whether debit card regulations will promote competition for merchants within the payment card industry and how the regulations will affect consumer welfare and payments system efficiency.²

In the world of payment card crime, technology matters. The coming adoption of computer-chip payment cards, announced recently by the industry, will affect fraud patterns in ways that are hard to predict. What is certain: criminals will not stand idly by as the new cards make fraud harder. They will adjust.

Separately, in the realm of market competition, Congress and the Justice Department have altered the playing field on which banks and card networks compete in the debit card market. The new regulations imposed since late 2011 have capped

certain fees and given merchants greater control over debit transactions, with ripple effects throughout the industry.

In the wake of these changes—whether driven by technology, fraud, regulation or competition—it is difficult to predict how consumers will fare over the long run. Will fraud rise despite the use of computer-chip cards? Will the new debit card regulations fuel competition in ways that benefit the public?

Although these questions remain open, our research identifies some likely outcomes and key factors that influence those outcomes. This *Briefing* provides a summary of our analysis in the three recent articles on how the changes to card payment technology and debit card regulation will affect the U.S. retail payments system in the next several years.

Computer-chip cards and fraud

The fraudsters, phishers, hackers, and pickpockets who thrive off payment card fraud may soon have their work cut out for them. The move by U.S. financial institutions to add computer chips to their debit and credit cards over the next few years will make payment card fraud harder. Compared with the magnetic-stripe cards carried by millions of consumers, the new chip cards will offer stronger defenses against fraud. But they certainly will not put an end to it.

In fact, as countries around the world have adopted

computer-chip cards, new trends in fraud have emerged. France, the Netherlands and the UK all switched from magnetic-stripe to computer-chip payment cards in recent years, with mixed results. The fraudulent use of lost and stolen cards declined in both France and the UK. But fraudsters soon shifted tactics and exploited other weak links in payment card security.

The evidence from overseas suggests that any prolonged accommodation of older card technology during a transition to computer-chip cards can allow fraudsters to exploit weak links in security. Reliance on less effective authentication methods also invites growth in fraud. U.S. regulators and industry leaders should expect shifts in the nature of payment card fraud and take proactive countermeasures.

The UK experience with cards and fraud

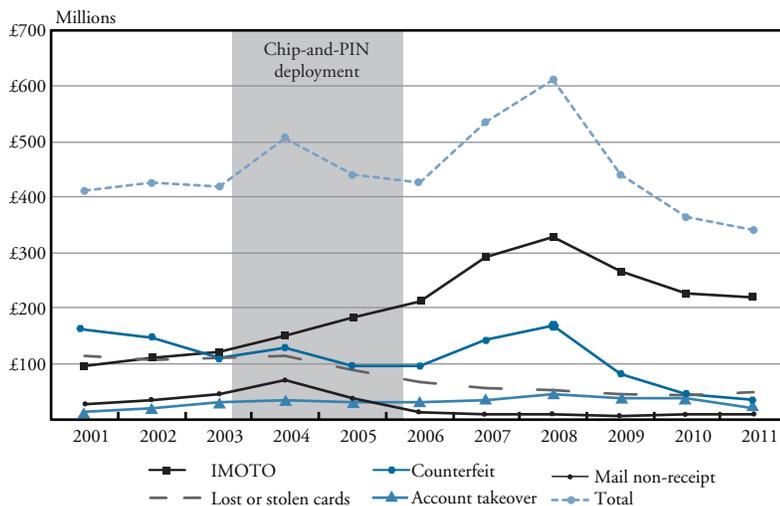
A phased, national rollout of computer-chip cards in the UK began in October 2003, with a targeted completion date of February 2006. The computer-chip cards in the UK are called “chip-and-PIN” cards because all transactions require a PIN. The benefits of the computer-chip cards were apparent as early as 2005 when fraud losses due to lost or stolen cards began to decline (see Chart 1). Both the added fraud protection due to the computer-chip and the required use of a PIN for transactions successfully limited the ability of anyone who possessed a lost or stolen card to create a fraudulent payment.

But payment fraud soon migrated to channels in the UK with weaker authentication, such as cards still using magnetic

strips and purchases made over the Internet, mail order and telephone order (IMOTO) purchases. For backward compatibility, during the transition period, new computer-chip cards had both computer chips and magnetic stripes. Fraudsters could then make counterfeit magnetic-stripe payment cards and use them wherever merchants or ATMs still accepted the cards, especially outside the UK. As a result, fraud losses on counterfeit cards in the UK grew from £97 million in 2005 to £170 million in 2008. The move to computer-chip payment cards also left authentication unchanged for IMOTO transactions, making them another attractive outlet for fraudsters. Fraud on IMOTO transactions grew rapidly, from £183 million in 2005 to £328 million in 2008.

After 2008, fraud losses with counterfeit cards and on IMOTO transactions declined. The decline was due to two factors. First, more merchants and ATMs on the European mainland had converted by that time to accept computer-chip cards, so fraudsters with counterfeit magnetic-stripe cards could no longer easily find locations where magnetic-stripe cards were accepted. Second, increasingly, merchants in the UK were adopting more secure systems for their IMOTO transactions—known as “3D secure” systems. In 2007, only 25 percent of respondents to a survey of UK Internet merchants reported that they accepted 3D secure payments, but the same survey found at least 59 percent of respondents accepted 3D secure in 2011. Total fraud losses on payment cards in the UK fell significantly, from a peak of £620 million in 2008 to £321 million in 2011.

Chart 1
Value of Losses Due To Card Payment Fraud in the UK



Source: UK Cards Association.

The experience with computer-chip payment cards in the UK shows that the ability to deter card payment fraud depends not only on the use of computer chips but also on other key factors. Computer chips proved their value for limiting fraud on counterfeit cards. However, some of the first computer-chip cards that were issued used weak authentication (based on static data) and were still vulnerable to attacks. Other significant declines in fraud were independent from the adoption of computer chips, resulting instead from the elimination of the magnetic stripe and improved authentication methods for IMOTO transactions.

Implications for U.S. payment card fraud

As the United States begins its transition to computer-chip payment cards, the country will reap the benefits of the dynamic data authentication processes that are not possible on magnetic-stripe cards but can be performed by computer-chip cards. The chip cards are also much harder to counterfeit. Some sources of payment fraud, such as counterfeit cards, will decrease. However, the experience in the UK and other countries also shows that other sources of fraud are likely to increase. Thus the prospects for reducing overall card payment fraud depend on how authorization and authentication protocols are implemented. If weaker authorization protocols continue, such as signatures for card payments rather than PINs, the degree of fraud reduction that can be achieved will be limited. Similarly, unless authentication protocols are improved for IMOTO transactions, such transactions will become a weak link in the defenses against fraud, and IMOTO fraud will likely increase.

The payment industry must also be alert to new forms of fraud as attackers probe for security weaknesses and exploit them. Fraudsters have strong incentives to commit payment fraud and will continue to test security measures and sometimes defeat them. Card issuers, in turn, will need to reevaluate their choices of authorization and authentication methods periodically, as new trends in fraud emerge.

In contrast with many other advanced countries, the United States does not have a comprehensive system for collecting and reporting statistics on payment fraud.³ Timely information on the sources of fraud allows policymakers and the card payment industry to respond swiftly and effectively to new attacks. The UK system for capturing and monitoring such information was a critical asset enabling the payment card industry there to respond to the new trends in fraud that emerged during the transition to chip-and-PIN cards. In fact, in the absence of critical information on the sources and types of card payment fraud, efforts aimed at limiting fraud may be misdirected and wasteful. Both regulators and the card payment industry could benefit from mechanisms to measure the levels and sources of fraud and to identify who pays the price—and how much is paid—for the nation's losses from payment card fraud.

U.S. debit card regulations

Public authorities intervened in the debit card market as controversy arose over the growing fees charged to merchants for processing debit card transactions. Merchants argued that lowering the fees through regulation would benefit consumers, because the high fees charged to merchants were imposing costs on both merchants and consumers. They argued that part of the burden of the fees had to be passed on to consumers in the form of higher prices.

Congress passed the Dodd-Frank Wall Street Reform and Consumer Protection Act in 2010. Its provisions on the debit card market became effective October 1, 2011. Also in 2011, a court settlement between the Justice Department and MasterCard and Visa set additional requirements. The aim was to give merchants and consumers relief from high fees and to promote competition within the payment card industry.

The industry argued that lowering the fees assessed to merchants would reduce consumer welfare. Consumers would likely face higher banking fees, according to this view, as banks sought to offset lost revenue. Also, the overall efficiency of the payments system would decline as consumers switched from debit cards to less efficient payment methods, such as checks.

In fact, the new regulations have caused a complex set of changes and their implications are still unfolding. The changes have brought some benefits to some merchants, but it is too soon to know whether consumers will benefit and whether payments system efficiency will rise in the long run.

Effects on card networks, banks, and merchants

The effects of the new regulations are complex due to the complicated structure of the industry itself. While it is the card networks, such as Visa or MasterCard, that set the interchange fees charged to merchants for processing debit transactions, the interchange fee revenue goes to the banks that issue cards. In this way, when banks choose which networks to use for their cards, they have an incentive to choose networks that charge high interchange fees to merchants. Those fees become the banks' revenue.

The regulations had immediate and dramatic effects on debit card networks' incentives and business practices. One new rule caps debit card interchange fees for banks that, together with their affiliates, have assets of \$10 billion or more. Smaller banks are exempt from the cap. The regulations also require banks to make at least two unaffiliated card networks available on their cards and give merchants the freedom to choose between those networks for debit card processing.

The results so far: a new, two-tier interchange fee structure that differentiates between regulated banks and exempt banks; a narrowing of the gap between the fees for signature transactions and the fees for PIN transactions; new incentives that affect how networks set their interchange fees for exempt banks; and new incentives that affect how networks set the network fees they charge merchants, including both fixed fees and fees charged per transaction.

The regulations significantly reduced the fees received by regulated banks, from 50 cents to 24 cents per transaction, on average (see Table 1). The average fees received by exempt banks remained almost the same (decreasing only slightly from 45 cents to 43 cents). Among regulated banks, banks with a significant proportion of transactions coming from

the opportunity to compete for customers by offering—and publicizing—fee-free accounts. How these moves and counter-moves play out will depend on the ongoing competition among banks.

Among merchants, after the regulations, some saw much sharper declines than others in the costs associated with debit card interchange fees. The average interchange fee per debit card transaction declined from 48 cents in the first three quarters of 2011 to 30 cents in the fourth quarter of 2011, suggesting that many merchants experienced cost savings. Yet, some merchants saw increases in the fees they paid per transaction.

Several factors have influenced the varying degree of cost savings seen by different merchants. The cost savings were greater among merchants that were assessed higher fees prior to the regulations, such as utilities, hotels, and e-merchants. Merchants that generate a large number of transactions have seen less savings than their counterparts. Due to volume discounts, larger merchants formerly paid lower fees than smaller merchants, prior to the new regulations, but afterwards both large and small merchants pay the same fees to regulated banks. Merchants with a relatively large share of signature transactions saw greater savings than merchants

with larger shares of PIN transactions, because the average fee decline for a signature transaction was greater. Finally, each merchant's cost savings has also depended on the fee structure chosen by the given merchant when it contracted with its merchant acquirer. Merchants that chose a structure that bundles interchange and processing fees may not see cost savings immediately.

A separate provision in the new regulatory environment requires the removal of restrictions on merchants—formerly imposed by card networks—that had curtailed merchants' ability to use incentives to steer consumers from one payment method to another (for example, from credit card to debit card, or from signature debit to PIN debit). Together with their new control for routing, merchants can influence market shares of card networks in terms of transactions. Some merchants have begun taking advantage of their new scope for control but many have not yet begun to do so.

Table 1
Average Debit Card Interchange Fees In 2011

Unit: cents

	Regulated banks		Exempt banks	
	Q1-Q3: Pre-regulation	Q4: Post-regulation	Q1-Q3: Pre-regulation	Q4: Post-regulation
All debit	50	24	45	43
Signature debit	59	24	54	51
PIN debit	34	23	32	31

Source: Federal Reserve Board of Governors.

signature transactions saw an even steeper decline in their fee revenue, because the average fee decline for a signature transaction was greater than that for a PIN transaction.

Banks have tried various approaches to offsetting these revenue losses. The most common approach has been to eliminate or reduce rewards formerly offered to debit card users. Some regulated banks also have attempted to impose new fees on customers for debit cards and checking accounts. In some cases customer protests have caused the banks to retract such efforts. In other cases, exempt banks have seized

Industry reactions and their impact on consumers and payments system efficiency

Incentives have shifted in the debit card market; the nature of market competition has changed; and card networks and banks have made various attempts to defend their market shares and offset lost revenue. The new regulations have had some of their intended effects so far, enhancing competition among card networks, especially among PIN networks, for merchants and reducing the burden on merchants of high interchange fees.

For consumer welfare overall, ultimately any net benefit will depend not only on the degree to which merchants pass on their cost savings to consumers, but also on the extent to which banks, seeking to offset revenue losses, impose new costs on consumers. Consumers' welfare may yet worsen if there is insufficient competition among banks and among merchants. The regulated banks that attempted to introduce new debit card fees were compelled to back off in part by consumer protests and, in part, by increased competition from exempt banks. But banks may introduce new fees in the future. Meanwhile, some merchants, particularly those with sufficient market power, may not share with consumers their cost savings from lowered fees.

Merchants and banks have taken various steps that have influenced consumers' choices of payment method. In response, consumers appear to have shifted from signature debit to PIN debit to some extent, which improves efficiency in the debit card market. It remains to be seen whether consumers in coming years will switch away from debit cards altogether, to more costly payment methods

such as credit cards and checks—a trend that would reduce the overall efficiency of the U.S. payments system. A decline in efficiency is more likely to occur if networks, banks, and merchants are faced with incentives that do not align with maximum efficiency. In cases where these parties find that less efficient payment methods help them retain or increase market share, generate more revenue, or reduce costs, they may seek to induce consumers to switch to these less efficient payment methods.

Conclusion

Both of the sources of change reviewed in this article—the new regulations and the new computer-chip cards—are likely to have some of their intended benefits. The regulations have already increased the level of competition in some parts of the debit card market. The computer-chip cards are sure to make some forms of fraud more difficult for criminals.

But in both cases, regulators and industry leaders would be mistaken to assume the problems they sought to address are fully resolved. The solutions they have put in place may bring some unintended effects in the near future.

To avoid such effects, policymakers and business groups together will need to monitor developments closely. Establishing a national system for collecting and reporting statistics on payment fraud will help policymakers and the payment card industry respond swiftly and effectively to new forms of fraud. And policymakers will need to monitor developments in the debit card market closely and continue to assess their effects on networks' competition for merchants, on consumer welfare, and on payments system efficiency.

Endnotes

¹Richard J. Sullivan, "The U.S. Adoption of Computer-Chip Payment Cards: Implications for Payment Fraud," *Economic Review*. Federal Reserve Bank of Kansas City. First Quarter 2013.

²Fumiko Hayashi, "The New Debit Card Regulations: Initial Effects on Networks and Banks," *Economic Review*. Federal Reserve Bank of Kansas City. Fourth Quarter 2012, and Fumiko Hayashi, "The New Debit Card Regulations: Effects

on Merchants, Consumers, and Payments System Efficiency," *Economic Review*. Federal Reserve Bank of Kansas City. First Quarter 2013.

³Richard J. Sullivan, "The Benefits of Collecting and Reporting Payment Fraud Statistics for the United States," *Payments System Research Briefing*, Federal Reserve Bank of Kansas City, October 2009.

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