ROBERT E. LITAN *and* MARTIN NEIL BAILY

1 Introduction

Money is one of those words with multiple meanings. Economists tell us that it serves as a *medium of exchange*, or the way in which actors in an economy pay for goods and services. It also is a *unit of account*, or the device by which prices of those goods and services (think dollars and cents) are determined. It is a *store of value*, a way in which actors can hold their wealth, though in modern financial systems there are typically more productive ways to hold wealth, such as financial instruments or hard assets such as real estate (in which case the value of those assets is expressed in the chosen monetary units).

This book is about money and its use, primarily by consumers in the first sense of the term, as a medium of exchange. More precisely, the chapters in this volume attempt to answer the following questions: Over time what forms has money taken? How are these means of payment likely to change in the years ahead? What, if anything, should policymakers do to facilitate those changes or, at a minimum, to avoid holding them back?

Why do answers to these questions matter? For one thing, the payments industry—governments and the firms that enable payments—is large and important in our economy. As noted in chapter 2, in the United States alone, private sector payments providers generate approximately

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$280 billion a year in revenue. This number does not include the substantial governmental resources that go into making money (coins and printing money) or moving it (checks and various electronic transfers).

Second, it turns out that how we pay for things influences what and how much we buy, and when. As we note below, and as a later chapter discusses in much greater detail, there is a significant psychological aspect to how we pay for things. Other things being equal, people tend to buy more goods or services, and to be willing to pay more for them, under certain circumstances, for instance, if they can pay by credit (credit cards) than with cash or its equivalents (debit cards). How the means of payment evolve, therefore, can influence how economies themselves evolve.

Third, the technology of money and means of payment is fascinating in its own right. Continuing advances in technology—communications and the digital revolution in particular—have shaped and will continue to influence what means of payment are devised. At the same time, however, consumers ultimately will determine which of these technologies they will actually use.

Fourth, the payments landscape is likely to be very much affected by public policies toward payments. Any form of payment requires trust on the part of both the seller and the buyer. No one wants to be the victim of fraud or theft. Government is required to enforce laws against such outcomes. Historically, governments also have had monopolies on the manufacture of money and on the means of its transfer (other than in face-to-face transactions). More contentious is whether, and to what extent, government is also needed to protect the market in private sector payments systems.

The chapters that follow address these and other issues associated with consumer payments. The authors are recognized experts, from both the academic and the private sectors, on payments issues. Initial drafts of these chapters were presented at a conference at the Brookings Institution on September 16, 2008.

We set the stage in this introduction by providing a brief history of money and consumer payments and discussing some of the economic characteristics of payments systems. We then outline some of the broad themes that run through the chapters. In doing so, we concentrate, as most of the chapters do, on payments technologies in use in the United States. Where relevant, however, we draw on experiences from other countries.

Money: A Brief History until the Age of Plastic

For thousands of years, people have used different things as money, replacing perhaps an even longer history of a system of barter, the exchange of different goods or services between buyer and seller. Barter is highly inefficient. What I want, you or someone else must have. There must be a coincidence of wants for barter to work. These happenstances become more costly to arrange as the number of people in an economy grows.

What has counted as money has changed over time. Livestock and foodstuffs probably were the first forms. Early in American history, tobacco was also used in some places in the South, and in fact was recognized as legal tender in Virginia in the seventeenth century. But these perishables had a basic problem: they couldn't be stored without much effort and expense, and they eventually spoiled. People turned to more durable inanimate things like shells and stones to overcome this difficulty, but even these forms eventually eroded in value, either through natural causes or because they were easily debased—with enough effort people could find more of them and thus reduce the value of what was already in place.

Nonetheless, certain forms of money have endured, though each is becoming less relevant for consumer payments in our increasingly digital world. For example, metal coins, in one form or another, have been in use since 700 BCE. Paper monies—more precisely, notes giving their holders rights to receive some form of metal in return—are a more recent innovation, first used by the Chinese in 140 BCE and later by the Romans. Paper monies became popular, however, only many centuries later during the Renaissance in Europe, and then in the American colonies, especially during the Revolutionary War.

But paper monies also have shortcomings. Without regulation or some explicit tie to the amount of a recognized commodity (such as gold), the production of notes can easily proliferate, destroying their value. That is why, in modern societies, governments (through their central banks) now exercise control over the production and distribution of so-called fiat money, money that can be used as a means of payment, a unit of account, and a store of value, but which is not necessarily backed by or redeemable for a given quantity of metal.

There is another drawback to both paper and metal money: it must be guarded against theft and must be transported to be used in exchange. The establishment of banks by Venetian traders as early as the twelfth century solved the storage problem by enabling depositors to place their money for safekeeping elsewhere. The banks would move money by simply changing entries in their account books or issuing bills of exchange, the predecessor to the modern check.

But bank money can lead to other problems. Banks can effectively print money by issuing bank notes, promising the holders the ability to redeem such notes in specie, typically gold or another hard metal. This system of fractional reserve banking arose as banks expanded the volume of their note issues relative to the amount of reserves, or specie, they had on hand. The banks counted on the fact that their depositors would not all want their specie back at the same time.

But what if they did, and banks did not have enough reserves to repay them? Such was the weakness of fractional reserve banking, which in fact was subject to periodic depositor runs or panics. In the late nineteenth century and early twentieth, one giant figure of finance—J. P. Morgan—personally used his bank to fight off such panics. Yet one man alone could not be expected to support an entire banking system, and so, in 1913, Congress created a government-controlled central bank to meet the liquidity needs of individuals and firms throughout the economy. The Federal Reserve System (Fed), governed by a central board in Washington, was given authority to establish reserve requirements for banks, to buy and sell government bonds and thereby exercise control over the money supply (although banks' willingness to lend also influenced how much money was in the system at one time), and, if necessary, to serve as a lender of last resort to the banking system.

It is now widely recognized that the Fed failed in discharging two of these responsibilities during the Great Depression, by allowing the money supply to shrink rather than continue to expand, and by not providing enough liquidity to prevent depositor runs that ultimately brought down roughly 9,000 of the nation's banks. Central banks here and elsewhere throughout the world have learned much since then. Although debate continues as to the Fed's role in contributing to the housing bubble that led to the 2007–08 financial crisis and ensuing recession, few have argued with the Fed's massive show of financial force in responding to the events: expanding the money supply at a rapid clip and lending not only to banks with liquidity problems, but to nonbanks and to the commercial paper market as well.

The Fed was given authority not only for managing the nation's money supply but also for clearing checks between banks, which previously had been the domain of private clearinghouses. These clearinghouses had levied the equivalent of small taxes on the checks they cleared to cover the risk that a paying bank would not be able to honor its commitments to payee banks. In 1918, the Fed assumed the risk of nonpayment, meaning that all banks could exchange their checks at par without any discount. In addition, the Fed absorbed the substantial cost of running this clearing operation, which has until recently required the physical counting and movement of an ever-growing volume of checks. Not surprisingly, the check became the dominant payment method in the U.S. economy from the end of the nineteenth century through the twentieth.

That was not the case in Europe, where giro payment systems instead have long dominated. Unlike checks, which put the onus on a payee's bank to collect from the payer's, giro payments put it on the payer, who instructs the bank, which only then transfers the funds to the payee's bank. Direct payroll deposit is an example of how the giro system works: your employer automatically puts funds in your account without writing you a check. Some customers in the United States use similar direct transfers to pay their utility bills and their mortgage or rent, but still often use (again until recently) checks to pay other parties. In Europe, individuals rely overwhelmingly on such direct transfers, and only rarely write checks.

Payments Methods: Plastic and Beyond

We avoid getting enmeshed here in the academic debate over why the United States went one way in payments (check) and Europe another (giro), largely because both systems are under assault from continuing technological change—the leitmotif of this book—which renders the history of how each side of the Atlantic got where it is today increasingly anachronistic. Payments technologies and the industry that has grown up around them have changed dramatically since the end of World War II. The change that launched it all was when money began to go "plastic"—that is, when consumers could pull out a card from their wallets and use it rather than cash or a check to pay for goods and services. This volume takes the plastic era as a given, and explores how the world of payments has moved and will continue moving beyond it.

Actually, the first payment cards were not plastic at all, but paper or cardboard, and limited to certain retailers, such as Sears. What we know today as the general purpose payment card—one that could be used at multiple vendors—began in 1950, when Diners Club launched its card for use at New York area restaurants (later expanded to many other locations). Shortly thereafter, Hilton Hotels introduced the Carte Blanche payment card, for use at hotels. Both of these cards, however, had limited usability, but were notable in how they adopted a two-sided business model: consumers paid an annual membership fee, and merchants paid the payment network a fixed percentage of the amounts consumers paid for the product or service.

American Express and Bank of America changed the payment card industry forever in 1958, when each issued a card that consumers could use at many types of vendors. With a much broader range than either Diners Club or Carte Blanche, both issuers were in a much better position to take advantage of network externalities—the chicken and egg notion that as more users are attracted to the cards more merchants will join, and vice versa. That is precisely what happened. Both American Express and Bank of America's Visa grew rapidly thereafter in popularity.

But the two new players used very different business models. American Express expanded organically, first within the United States, and later throughout the world, adding merchants and customers to its roster, and directly clearing all charges by cardholders and payments to merchants. Bank of America initially tried to expand by franchising, inducing smaller banks to join its network. Eventually, a rival group of banks formed MasterCard, a membership association of banks. Bank of America did likewise, abandoning its ownership of the network in favor of a federation of banks, which became the Visa network. Later, Sears launched its own card network, Discover, eventually spinning it off into a separate business line. Like American Express, however, Discover operated its card network directly, in contrast to the cooperative or membership business model followed by MasterCard and Visa. These contrasting business models coexisted for nearly five decades. In response to litigation over the way in which their members set network fees, both MasterCard (in 2006) and Visa (in 2008) adopted the direct ownership model and became public companies.

American Express's business was also unique in another respect. Whereas the other card networks offered their cardholders credit, for many years the American Express card was only a charge card, which required customers to pay the entire monthly balance when billed. Eventually, however, American Express began to offer credit cards as well so that it could more effectively compete with the other card networks.

Today, credit cards are ubiquitous. In 2007, American consumers charged more than $1.7 trillion in purchases on them ($1.9 trillion in constant 2006 dollars). Outstanding credit card debt topped more than $2.5 trillion, or a median value of $2,200[1] per household that owes money. Having a credit card has become essential to consumers and businesses, even for those who pay their bills promptly (so-called convenience users) and do not use the cards for credit. In many locations, or with many vendors, credit cards serve as personal identification.

In 1975, banks introduced another type of payment card, the debit card. As its name implies, the debit card immediately deducts charges from users' bank accounts. Banks typically have coupled debit card features on their ATM cards, and many now permit credit charges as well. Debit cards historically have been far more popular outside than inside the United States, especially in Europe. But they have been rapidly gaining popularity here despite the fact that users cannot take advantage of the float that credit cards offer (the period between when charges are made and payment of any credit card balance is due). Apparently, many consumers prefer the discipline of spending within their means that debit cards help enforce.[2]

The Internet revolution is now pushing payments increasingly into cyberspace. With Internet banking, customers no longer need to write checks to pay for many routine household expenses, or even to pay off their credit cards. With a few keystrokes on their banks' home page, bank customers can use their computers, tethered to the Internet, to pay bills. European countries with giro systems, meanwhile, have adapted them to the online environment. The Internet also has made possible entirely new payments networks, such as PayPal, that enable individuals to transfer funds either to other individuals or to vendors.

Wireless or mobile payments technologies are the next frontier in payments. In some countries consumers can already use mobile devices such as cell phones to charge payments to their credit card accounts or to debit their bank accounts. In Japan cell phone users are charged directly for the amount of content they download from the Internet. The major payment networks in the United States, along with several new ventures, are working on ways to introduce such services in the American market.

Several characteristics are common to all successful payments technologies or systems. Both the payee and the payer must accept the method of payment, thus forming a two-sided market. Furthermore, payments technologies are not free. Handling money, including the costs of printing it and taking measures to keep it safe (whether at home or in a bank), involves money. It takes money to manufacture, handle, and clear checks. The same is true of the various payments cards: ATM, credit, and debit. Merchants must have card readers and the networks must process the payments transfers (although continued advances in digital technologies have lowered the related processing costs). Mobile payments networks and devices also entail costs. Consumers and merchants balance the relative costs and convenience of the various technologies in deciding which to use.

Nonetheless, consumers display considerable inertia in their use of the various payments methods available. Once consumers and merchants get comfortable with a particular technology, they need a compelling reason to switch to another, as David Evans and Richard Schmalensee explain in detail in chapter 3. As a result, mere incremental improvements in payments technologies typically fail in the marketplace. For a new method of payment to be successful, it must offer substantial numbers of users significant cost savings or added convenience relative to existing payments technologies or methods (although typically younger users have less emotional investment in an existing technology or payment method and are likely to be the most open to try a new one).

Whatever its cost or convenience, a payments system must be trustworthy and secure, or people will not use it. The law can provide comfort to users and thereby accelerate the use of a particular payment method. The federal liability limit of $50 for cards that are stolen or fraudulently used clearly facilitated the rapid growth in acceptability of credit cards. Technology or software code will have to do the same for Internet payments technologies. Payments networks continue to work on a variety of ways to verify users' identity, and consumers surely will see some of them in the future.

These and other themes are covered in the chapters that follow, which we now briefly summarize.

The Future of Payments: A Preview

The next two chapters lay out alternative visions for the future of consumer payments. Vijay D'Silva, a financial services expert with McKinsey and Company, describes in chapter 2 three broad trends that he believes will reshape the industry.

First, the use of checks and cash, which currently account for about half of all U.S. payments transactions, will continue to decline, perhaps at an accelerating pace. D'Silva suggests that the increasing use of electronic payments—clearing of transactions through automated clearinghouses (ACH)—will drive this trend more than the continued growth of payments cards. The progressive digital imaging of checks will reinforce the declining use of paper-based checks, in particular. Under legislation enacted by Congress in 2004, banks are required to honor digital checks in lieu of paper ones. This Check 21 initiative is increasingly driving merchants and banks to image checks. By 2010, D'Silva expects paper checks to have largely disappeared from the banking system.

Second, D'Silva forecasts increased use of payments systems based on open networks, which, in contrast to closed systems, permit users to access a network with their own devices, as long as the devices are compatible with the rest of the system. For example, payments providers are currently experimenting with credit-card-like machines that would allow consumers to directly access ACH networks without having to go through commercial banks. The Internet also may enable other plug-and-play capabilities that will facilitate payments innovations. At the same time, however, the consolidation of the banking industry—especially in the wake of the 2007–09 financial crisis—is likely to drive many more transactions to be processed internally within fewer large banks, because both the payer and the payee are increasingly likely to have banking relationships with the same institution.

Third, D'Silva expects to see many new payments instruments offered by new entrants into the payments industry. Already, mobile wallets are in use in Japan, permitting users to transfer funds to merchants by their cell phones. Transportation authorities in the United States and elsewhere around the world are increasingly mandating "contactless payments" devices, such as E-ZPass transponders in automobiles, which permit drivers to pay highway tolls without stopping at toll booths. D'Silva suggests that a future growth market will be one that provides person-to-person payments across national borders—a more extensively international PayPal. At the same time, D'Silva notes that the payments sector is littered with failed experiments, and he expects the future to be no different in this regard.

D'Silva closes with advice for would-be entrants into the payments industry: be aware that consumer payments behavior changes slowly; adopt a long-run mentality; leverage an existing infrastructure where possible; new payments methods must offer much more than incremental improvements over current methods; and banks are ideal partners because they are key to the payments business.

In chapter 3, David Evans of University College in London and the University of Chicago Law School and Richard Schmalensee of MIT, authors of the leading book on the credit card industry,[3] offer related thoughts about how they see the payments industry and payments technologies evolving. They second the warning of D'Silva that consumer behavior in this area is difficult (and costly) to change, and thus stress that forecasting what the future will look like also is difficult. For this reason, they counsel government policymakers to heed the Hippocratic warning "Do no harm" in setting policy governing payments, given that preemptive rules can have unintended undesirable consequences.

The authors begin with an overview of payment cards, how they arose, and the benefits they have delivered to users. Of particular relevance, the authors lay out the economics of payment cards and the two-sided platform they create. Once consumers and merchants become accustomed to using the platform, they are reluctant to use other platforms or payments technologies. This has not stopped technological progress in payments, however. To the contrary, the revolution in computer and information technology has radically changed the cost and convenience of payments cards over time. Many younger consumers may not realize it, but anyone older than forty must surely be aware that the time it takes for a merchant to complete a card transaction has dramatically declined over the past several decades. Based on the authors' survey evidence, consumers today are quite happy with their payment cards, and show little inclination to use other payments technologies, such as contactless cards or mobile phones. Similar survey evidence for merchants is lacking, but apart from wanting to pay lower merchant fees to the card networks, merchants too have shown little inclination to embrace other payments technologies.

For new payments technologies to succeed they must crack what Evans and Schmalensee call the chicken and egg problem, the notion that consumers won't use a technology unless it is widely accepted among many merchants, and merchants won't invest in accepting payments using that technology unless many consumers are already using it. The authors provide a brief history recounting the failure of a number of innovative payments technologies to solve this problem. One successful exception to the pattern of failures is BillMeLater, a technology that permits the consumer at a retail checkout to click a feature that, after approving the customer based on the last four digits of his or her social security number, pays the merchant and bills the customer later.

The authors are skeptical, however, that any future revolution in payments will come simply from making transactions processing faster or cheaper; there is only so much more that can be done. Instead, they suggest that real change will come from the mashup of payments with technologies and business models that lie outside the traditional payment card industry. One such nontraditional business model could be adapted from the online advertising industry, which though in its infancy has been growing rapidly. The authors speculate that as online ads are more effectively targeted to consumers most likely to respond to them, new payments models may be married with online advertising or develop as an outgrowth.

The mobile phone is another technological platform on which new payments systems are likely to be based. After reviewing the development of the mobile phone industry, the authors survey the possibilities and the realities—especially in emerging markets—of mobile payments.

A special attraction of mobile phones is that they can be and are being used not only for payments, but also for multiple other purposes: locating products and services, price comparisons, and devices for accepting targeted advertising. The emergence and growth of "cloud computing" should also promote other payments innovations in the future.

Evans and Schmalensee conclude with some observations on the appropriate policy framework for promoting payments innovation, a topic that other chapters in the book also explore in even greater depth. Their broad message is that though policymakers should be vigilant in protecting consumers from abusive or deceptive practices, especially in a world where retailers and payments system providers have more and easier access to consumer information than ever before, they should also be cautious to avoid stifling continued innovation.

Although it is clear from chapters 2 and 3 that payments systems have continued to evolve and to meet consumers' needs, it is useful to step back and ask, but what exactly do consumers actually want from their payments arrangements? Drazen Prelec of MIT takes up this seemingly elementary but critical question in chapter 4.

Prelec begins with the puzzle that has challenged a number of payments analysts: why have debit cards, which immediately debit consumers' bank accounts at the time of purchase, been growing at such a rapid clip in the United States (passing credit cards in 2006 as the most popular means of payment, measured by transactions volume), when credit cards permit users to have short-term interest-free credit (until balance payments are actually due)? A similar puzzle surrounds the use of prepaid cards.

Drawing on findings from recent experimental research, Prelec's chapter provides some answers to the puzzle. But to appreciate the answers, it is first necessary to understand his basic framework of analysis.

Prelec begins with a simple, but critical, insight: that payment takes some of the glow off consumption. The pleasure or benefit consumers derive from a given item of service is reduced by having to pay for it. A diner will much happier if he or she doesn't have to pick up the tab for dinner with a friend than if he does. In Prelec's terminology, payments exact a moral tax on consumption. Different payments methods affect this moral tax very differently.

For example, prepayment is one simple way for consumers to reduce the moral tax: having paid for the service or item in advance, consumers can make themselves feel better about using it (or eating it, in the case of a restaurant meal). This is not necessarily true, however, for durable goods, whose services are delivered or consumed over a lengthy period. In that case, consumers prefer to buy on installment, or on credit.

But prepayment has its drawbacks: foregone interest on the money spent and that the payment is irreversible. Prelec describes a number of buffering mechanisms that preserve the moral tax advantage of enjoying a good as if it were free, but giving the recipient some flexibility on how the money is spent. Beads at Club Med locations, usable for food and drink, are one example. Frequent flyer miles are another. Prelec explores how various other payment plans also permit consumers to feel as if the marginal cost of using or consuming a product is free of the moral tax. For example, the most popular Netflix subscription plan for DVD movie rentals charges consumers a monthly fee and allows them to have three DVDs at home at any given time. Because the DVDs are prepaid, the marginal cost of watching another movie is zero.

Prelec uses this framework, and specifically the notion of the moral tax of payments, to explain why debit card use has been growing faster than credit card use. For one thing, when consumers pay by credit card, in reality they are only deferring actual payment—that is, deduction from their bank balances—until they receive and pay their credit card bills. The time lag between purchase and actual payment can make the payment very distasteful, given that it comes well after the purchase, and is in a fundamental way disconnected from the enjoyment of using the item or service.

Second, debit cards provide self-control. Evidence from bidding experiments shows that people are willing to pay more for a given item when they can pay with a credit card than with cash. Debit cards thus constrain bidding and spending. Put another way, payments arrangements that reduce the moral tax also make it more difficult for consumers to track and control expenses, and thus eliminating the moral tax would encourage overspending. The challenge in designing future payments mechanisms is to appeal to consumers' desires for self-control but at the same time to also provide convenience and lower costs.

Prelec's analysis serves as a segue to the last three chapters of the book, each of which addresses from a different perspective what policymakers should do to promote payments innovations. In chapter 5, Kenneth Chenault, chairman and CEO of American Express, examines the policy environment through the lens of the history of Amex's own payment cards. That experience teaches two lessons: that change is a constant in the payments business, and that trust is key to its success.

Change is reflected in the current move to online and mobile transactions, as well as by entry of new players—other than the main payment card networks—into the industry (such as Verizon, BillMeLater, and PayPal). Chenault is optimistic that electronic payments products, in particular, will grow in volume, both in the United States and around the world, because of the growing acceptance of these products and continued changes in technology.

No player or payment technology will be used, however, unless both consumers and merchants trust that it will handle transactions correctly, promptly, and efficiently. Yet, as Chenault candidly notes, public confidence in the credit card segment of the payments industry has eroded in recent years in light of various abuses. He singles out universal default, the practice of raising the interest rate on a particular card if the customer is delinquent paying on another (a practice he notes that American Express does not engage in). Chenault applauds initiatives by regulators (since adopted) to rein in this and other abusive practices.

In chapter 6, Nicholas Economides of New York University takes a different view of the credit card industry, arguing that its fees have been considerably higher than its costs. He attributes this situation to three factors. One is the rules the card networks impose that do not permit merchants to steer competition to cards that have the lowest fees.

Another is the requirement that merchants accept all cards issued by the networks (honor all cards). Last is that the networks set the maximum interchange fee paid by acquiring banks (those collecting on behalf of the merchants) to issuing banks (those issuing credit cards).

The honor all cards rule was recently eliminated as an outcome of an antitrust lawsuit filed by merchants against Visa and MasterCard in 2003. Interchange fees are also irrelevant now that both card networks have abolished their member ownership structure and gone public as single corporate entities. Both Visa and MasterCard, like American Express, simply assess merchants to defray the costs of operating the network. These recent developments leave Economides to argue that the first restriction—network-imposed limits on the ability of merchants to steer customers to the lowest-priced cards—likewise should be eliminated.

Thomas Brown of O'Melveny and Myers sets out in chapter 7 an alternative view of policy toward credit cards. After briefly surveying the history of payments, Brown argues that the development of the payments card is one of the more important innovations of the twentieth century—on a par with semiconductors, the cell phone, and the personal computer—yet one that consumers now take for granted. Credit cards, in particular, have fundamentally changed the way payments are made and credit is extended, by enabling consumers to tap into a line of credit without repeatedly having to go a bank loan officer to approve a loan to finance each new purchase. As other authors in this volume note, debit cards and prepaid cards are now taking an increasing share of the payments wallet, and promise change well beyond traditional point-of-sale transactions. Governments are now using prepaid cards to distribute a wide range of benefits, including unemployment insurance and workers' compensation payments, and are likely to make greater use of such cards for benefits payments in the future.

Brown recites this history to make several policy-related points. First, the federal government, by design, will always have a role in setting the policy framework for the payments industry. The U.S. Constitution gives the federal government the power to coin and regulate money.

The Federal Reserve will also continue to manage two consumer payments systems—cash and checks—even as electronic forms of payment assume greater importance.

Second, the government is essential to preserving public confidence in the integrity and reliability of all payments systems. Although technology is the first line of defense in securing electronic payments, government must be there to prosecute those who compromise that security through illegal means (such as thieves who steal consumer information from payments cards or online and use it to create counterfeit cards or transactions). At the same time, however, Brown argues that policymakers must permit financial institutions and payments networks to develop better ways of reducing fraud, without imposing liability for fraud on merchants by statute or by judicial decision. More fundamentally, government must resist the temptation to manage private payments systems, which in Brown's view runs great risks of chilling future innovation.

Conclusion

At the risk of repetition, it is clear from the chapters in this volume that consumer payments systems will continue to change, delivering ever greater benefits to users. But ultimately, as with other goods and services in the economy, payments must meet consumers' needs. There is an inherent tension between consumers' comfort with existing payments systems and the innovations in those systems that are driven by competition from payments system networks. Government policy can moderate but not eliminate this tension, by preventing fraud and other abusive practices that undermine users' trust in particular payments systems or technologies. Ultimately, however, continued advances in technology will determine how and at what cost consumers will pay for the goods and services they purchase—in ways that consumers will accept and embrace, but are unlikely to notice. Such is the fate of the financial plumbing of economies: the way money has always moved and will continue to for the foreseeable future.

Notes

1. Brian K. Bucks, Arthur B. Kennickell, Traci L. Mach, and Kevin B. Moore, "Changes in U.S. Family Finances from 2004 to 2007: Evidence from the Survey of Consumer Finances," *Federal Reserve Bulletin*, vol. 95 (February 2009), pp. A1–A56 (www.federalreserve.gov/pubs/bulletin/2009/pdf/scf09.pdf).

2. A variation of the debit card is a prepaid card, which is widely used throughout the world for urban transportation and cell phone use. Unlike debit cards, however, prepayment cards can be used only for specific purposes.

3. David S. Evans and Richard Schmalensee, *Paying with Plastic: The Digital Revolution in Buying and Borrowing*, 2nd ed. (MIT Press, 2005).