

Regulating Electronic Money in Small-Value Payment Systems: Telecommunications Law as a Regulatory Model

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Introduction

Individuals and businesses are increasingly using advanced telecommunications information services to effect a wide variety of commercial transactions. Any information that can be digitized can be sent over a telecommunications system. Automated, electronic information systems provide faster, less expensive, and more reliable information transmission in what has been termed "electronic commerce".¹

Electronic commerce differs from traditional commerce in the way information is exchanged and processed. Historically, transactional information was exchanged through direct, personal contact or by using the phone or postal systems. With electronic commerce, some form of electronic processing is used for the exchange of value-information is conveyed through a digital communications network, computer system, or some other electronic media.

In a broad sense, payment systems enable payment mechanisms to be used as mediums of exchange. The payment system's enabling mechanism is of particular importance because of its wide use as a means of payment, its availability, its universal acceptance, and its geographic dispersion. Currency, checks, wire transfers, credit cards, and debit cards are payment system mechanisms in which value is exchanged in transactions for goods, securities, and services. In 1994, consumers used currency as payment for 73 percent of transactions, checks for 17 percent, credit cards for 5 percent, Automated Clearing House (ACH)² for 3 percent, and debit cards for 2 percent of the transactions.³

The average value of cash transactions is small-estimated to average five dollars per transaction.⁴ Although their importance in terms of total value of all expenditures is limited, small-value cash transactions are estimated to account for 36 percent of the value of U.S. family expenditures.⁵ Accordingly, cash is important for small-value, high-volume transactions-the typical personal consumer transaction.

Electronic payment systems exist in a variety of forms which can be divided into two groups: wholesale payment systems and retail payment systems. Wholesale payment systems exist for nonconsumer transactions-transactions initiated among and between banks, corporations, governments, and other financial service firms. High-value wholesale payments flow through the three major interbank funds transfer systems: the Clearing House Interbank Payment Systems (CHIPS),⁶ the Society for Worldwide Interbank Financial Telecommunications (SWIFT),⁷ and Fedwire.⁸ Electronic transfers utilizing these types of payment systems are beyond the scope of this Note.

Retail electronic payment systems encompass those transactions involving consumers. These transactions involve the use of such payment mechanisms as credit cards, automated teller machines (ATMs), debit cards, point-of-sale (POS) terminals, home banking, and telephone bill-paying services. Payments for these mechanisms are conducted online and flow through the check truncation system⁹ and the ACH.¹⁰ Electronic transfers involving these types of payment mechanisms and payment systems are also beyond the scope of this Note.

The distinction between wholesale and retail electronic payment systems parallels the distinction that has evolved in regulating these systems. Wholesale electronic payment systems are regulated by Article 4A of the Uniform Commercial Code. Retail electronic payment systems are regulated by the Consumer Credit Protection Act,¹¹ the Truth in Lending Act¹² and its adjunct, Regulation Z;¹³ and the Electronic Funds Transfer Act (EFTA)¹⁴ and its adjunct, Part 205 of Regulation E.¹⁵ This regulatory distinction reflects the kinds of parties involved-rules for retail electronic payment systems are fashioned with the consumer in mind whereas rules for wholesale payment systems are fashioned with commercial parties in mind.

This Note focuses on the stored value or "smart" card as a payment mechanism. Smart card technology represents a real change in how and where information is processed. The smart card is a credit card-sized payment mechanism with an integrated circuit chip embedded within the card. The embedded chip enables the card to contain significant amounts of data including prepaid stored value. The embedded chip can also hold programs that interact with data either contained on the chip or external to the chip. These programs can be permanent and unchangeable or can be modified when the card is connected to a network. Data can be stored, updated, and retrieved both when the card is issued and throughout its life. However, because of the embedded chip, the smart card operates as a stand alone payment mechanism-in effect, a direct substitute for cash-without requiring online network connections. This stored value can be accessed and altered by terminals at a merchant's establishment or at remote locations. A consumer with a smart card can go to a bank or ATM and have the card loaded with a certain amount of value. The consumer can then proceed to make purchases, up to the amount of stored value, in the same manner as if currency were being used. At each terminal, the device reads the smart card to determine that there is sufficient value available and deducts the amount of the transaction. When the card's value has been exhausted, the consumer can return to the bank or ATM to replenish the value.

How quickly and widespread the technology is utilized is to some extent a function of whether the market is

ready to accept the new technological developments. In addition, the regulatory framework adopted will impact the development and advancement of any new technology.

The development of innovative electronic transactional networks raises numerous legal and regulatory issues that must be addressed if we are to realize the potential of electronic money. These include finding acceptable methods for authentication and protection of information, accommodating the special needs of law enforcement, and creating the requisite means of settling disputes.

Specific questions raised are: How will issuers be regulated? Who will set the standards? How can payments transacted in an electronic environment be made secure? How will regulators police money laundering and counterfeiting? This Note identifies five key issues raised by this new electronic payment system mechanism and proposes strategies for regulatory control. One of the chief aims of this Note is to draw attention to the regulatory implications in using electronic money in small-value payment systems.

Although it is not clear whether or how smart cards will be regulated, the government has thus far deliberately avoided issuing specific regulations. The resulting ambiguity is not helpful. Although this Note argues that unnecessary regulation will impede the development of this technology, so will uncertainty regarding governmental action. The government should come forward and determine what regulations will and will not apply. An excellent model for regulating smart cards is the Telecommunications Act of 1996, which seeks to promote competition in another highly regulated industry.

Part I of this Note reviews the nature of money and payment systems. Part II examines the use of stored value or smart cards as an electronic payment mechanism to effect small-value, high-volume transactions. Part III examines various policy and regulatory issues presented by this payment mechanism and analyzes the applicability of existing regulations. Finally, Part IV briefly explains why the Telecommunications Act of 1996 serves as an excellent model for regulating these payment mechanisms. A flexible regulatory posture must be adopted in order to encourage innovation and competition rather than to impede or circumscribe activities.

I. Money and Payment Systems

Although electronic payment systems have enjoyed longstanding use by large businesses and financial service organizations to displace high-value transactions, traditional payment systems have utilized cash to effect low-value, high-volume transactions. This is because electronic payment systems have been too costly to use for low-value transactions. However, advances in telecommunications and computer technologies now make electronic commerce viable for small businesses and individuals.¹⁶ Furthermore, the rapid growth of the Internet¹⁷ and online services¹⁸, the deployment of convenient point-of-sale payment systems, and the readily available system of automated teller machines all set the stage for broad-scale electronic commerce. Once security is established on the Internet, the necessity for using costly private networks and leased lines¹⁹ for even large-value transactions arguably is eliminated.

A. Emerging Payment Technologies

There are many emerging electronic payment technologies both in the United States and abroad that are attempting to automate small-value retail payments and to provide secure methods for making payments over communication channels, such as the Internet. There are features of these mechanisms that present additional issues, primarily with respect to privacy and transnational regulation. Although these payment technologies are not the subject of this Note, a sampling of these technologies is provided:

*First Virtual.*²⁰ The account is set up by phone using a traditional credit card number and a First Virtual account number is issued. Clients provide their credit card numbers to First Virtual over the phone or other non-Internet method, and are issued a personal account number to make purchases over the Internet. This payment mechanism allows the user to order goods online and then charges the user's credit card company on behalf of the online merchant. The merchant reports the transaction amount with the First Virtual account number. First Virtual then confirms the purchase with the customer via email. No special software is required

for either purchaser or merchant.

DigiCash ²¹ DigiCash bv was founded by David Chaum, a mathematician and privacy expert. This provider creates *e-cash*, proprietary electronic cash tokens, which are marketed as being the equivalent of cash. An account is established at a DigiCash-licensed bank with real money. Once established, the customer can withdraw *e-cash* that is stored on the user computer's hard drive. Using proprietary software, *e-cash* can be spent with an Internet merchant or with anyone else whose computer is set up to deal in *e-cash*. Using public-key cryptography, the digital tokens are said to be secure and can be registered and verified by the issuer without revealing to whom it was originally issued. In effect, these digital cash transactions are capable of being as anonymous as cash. No transaction confirmations are necessary, meaning the merchant can immediately ship the product.

CyberCash ²² This payment mechanism consists of a downloadable software package using public-key encryption that is designed to assure the security of credit card transactions over the Internet. The system protects the customer's authentication data and provides nonrepudiability. An account is set up and acts as an Internet front end to any existing credit card that is designated. When a purchase is made, proprietary software is used that sends the purchase and account information in encrypted form to the account provider. The provider in turn sends the information to the appropriate financial organization for processing.

NetCash ²³ This concept is similar to *e-cash*, except that it does not require any special software to use. NetCash is transmitted across the Internet using an encryption scheme known as PGP (pretty good privacy). To get NetCash, a party must send a check or money order to the company's headquarters. The company returns electronic coupons via e-mail.

Mondex ²⁴ Mondex is owned by Master Card and National Westminster Bank of London and is being tested in several countries. Mondex uses a smart card to store electronic cash which can be used to pay for goods and services in the same way as cash but with some key benefits over traditional cash. This provides the portability and network independence of physical coins. Future intentions include using modified telephones, ATMs, and other devices to transfer value from a bank account to a smart card.

NetChex ²⁵ This payment mechanism is similar to CyberCash for checking accounts.

B. Separating Money from the Payment System

For purposes of discussing payment system innovation, efficiency, and risk, it is helpful to distinguish the payment mechanism from the payment system. ²⁶ Money, notwithstanding form, serves as the payment mechanism in the payment system.

1. Money

Money is a medium that people are willing to accept for the goods, securities, and services that they sell. Money serves three purposes. ²⁷ First, money serves as a medium of exchange. Because people readily accept money in trade for goods and services, transactions are greatly simplified. Second, as a standard of value, money serves as a measure for the value of a good or service and therefore provides a standard for making comparisons between different goods and services. Finally, money functions as a store of value. Money can be saved and used in the future.

In order to realize its three functions, money possesses certain characteristics which allow it to enable transactions. ²⁸ First, in order to function as a store of value, money must be durable. In other words, when money is not spent, the user is able to retrieve it in the future: it does not disappear. However, if money is destroyed, stolen, or otherwise lost, it is not replaceable. Second, it must be difficult for individuals to create or counterfeit money. Public trust in money's legitimacy is an essential element of its successful use as a medium of exchange. Third, money must be widely accepted. The larger the community of users who trust and accept

money, the more that money's value as a medium of exchange is increased. Furthermore, there are well-accepted and relatively fixed mechanisms for converting among various forms of money. Finally, when traditional currency is exchanged, there is anonymity.

Cash offers both privacy and anonymity because traditional currency does not contain information that can be used to identify the parties or used to determine the transaction history.²⁹ Within a commercial environment, cash transactions usually provide anonymity to the buyer but not the seller.

Since 1971, United States currency has not been convertible to a commodity, such as gold or silver.³⁰ Hence, people are willing to accept currency in exchange for goods and services only because they are confident that it will continue to be accepted in exchange and will serve as a stable store of value.³¹ The Federal Reserve, as the country's central bank, is responsible for maintaining the integrity of currency by controlling the amount of money in circulation.³²

Moreover, money is simply a representation of value-it is worth what we think it is worth because we have come to accept it. When traveler's checks are purchased, consumers trust the name behind it. Merchants who accept traveler's checks know that sometime in the past, the user gave cash or used credit in exchange for the paper. The whole structure of traditional money is built on faith, just as electronic money will have to be.

Money can be viewed in two different forms. The first is circulating currency which is issued by central banks. While traditional currency is convenient for most small-value transactions, it is difficult to exchange in large amounts and transport or store securely. The other form of money typically used for transactions is the demand deposit balance at financial institutions-notations in the ledgers of depository institutions such as banks.

Most money consists of demand deposit balances³³ rather than as paper currency. In fact, the amount of money that exists as demand deposit balances vastly exceeds the value of money in circulation. Exchanges based on demand deposit balances require the debiting of one party's account and the crediting of another party's account. Institutions that accept demand deposits are required by law to be prepared to convert these deposits into currency on demand.

2. Payment Systems

In its simplest form, a payment system is an agreed upon way to transfer value between a buyer and a seller in a transaction.³⁴ When coupled with rules and procedures, the payment system provides an infrastructure for transferring money from one entity in the economy to another. Payment systems can be distinguished by the mechanisms used to transfer value in an exchange of goods or services.³⁵

The payment system can be as simple as handing currency over the counter to a merchant in exchange for goods, with institutions and procedures in the background for distributing and redeeming currency. These transactions, which represent direct, real-time payments between buyers and sellers in the economy, also permit the legal obligations that give rise to the payments to be discharged very rapidly once the payment process has begun. In this respect, the process of payment and settlement by traditional currency sets a standard of efficiency against which other payment mechanisms may be compared. The goal of an efficient payment system, then, is one that allows instant confirmation of a transaction, allows buyers and sellers to directly exchange the necessary information and value for consummating a transaction without third party confirmation, and does so within a secure environment.

By comparison, most of the other payment mechanisms involve the transfer of deposit money or claims. These mechanisms involve using paper or electronic payment orders that set in motion a chain of transfers involving two or more banks or other entities acting as intermediaries, specialized clearinghouses, transportation and data communication links, and computerized accounting systems for updating the accounting records of the financial institutions. Despite the obvious technical variations between different paper-based and electronic payments systems for transferring deposit money, the goal of all these systems is essentially the same. The monetary claim

of the person making a payment is reduced and the claim of the person receiving the payment is increased.

Historically, payment system transactions were exclusively provided by banks.³⁶ However, the dominance of small payment systems by the banking industry is being challenged by a nascent industry reacting to consumer demands. Today many nonbank entities provide these services.³⁷ In fact, the competition for the provision of payment system mechanisms "has turned monetary value transfer into a commodity."³⁸ The banking industry has trailed other industries in developing and offering electronic money payment systems for small-value transactions. For example, mass transit and telephone companies have offered stored value card technology for nearly a decade.

C. Basic Elements of a Payment System

The payment system functions of clearing and settlement occur regardless of the mechanism used to effect payment.³⁹ When currency is used to enable a transaction, the act of payment involves the exchange of value along with settlement. This is because the currency represents final payment.⁴⁰ Hence, currency is fungible-it is readily acceptable and can be immediately used in another transaction.

By comparison, when a check is used in a transaction, these functions do not occur instantaneously. When a check is tendered in exchange for a good or service, a transaction takes place. But the actual exchange of value is contingent upon being able to collect the check from the bank the check is drawn upon. The check recipient first deposits the check in his own account; his bank, as the collecting bank, presents the check to the paying bank through a process known as clearing.⁴¹

Once clearing has occurred, the paying bank transfers "good and final funds"⁴² to the collecting bank, so the depositor can use the funds received in the transaction. The transfer of "good and final funds" actually involves a simple accounting operation with the appropriate Federal Reserve branch which transfers funds between the different commercial bank reserve accounts held there.⁴³ The transfer of "good and final funds" is the settlement function.⁴⁴

As noted above, when the payment mechanism is "good and final funds," as is the case with currency, there is no need for clearing the payment between banks nor in having a central bank provide settlement. The payment itself is settlement.

II. Electronic Money Payment Mechanisms for Small-Value Transactions

An important emerging mechanism for enabling small-value payment systems is electronic money. Electronic money is a payment mechanism that is a direct substitute for traditional cash; value is transferred electronically to pay for goods and services at vending machines, retail establishments, over networks, or through direct person-to-person exchanges.

It has been suggested that electronic money is likely to "lead to a new concept of pocket money, give birth to a new commercial payment system for the Internet, change the way governments pay out benefits electronically, and revolutionize the movement of value over telephone lines and airwaves."⁴⁵ Imagine the convenience of not having to carry around coin or currency to pay for parking, newspapers, or other small-value transactions. The use of electronic money in low-value, high-volume transactions opens up a wide variety of new services⁴⁶ and changes the way in which old ones can be delivered.

Using electronic money for payment increases the efficiency of transactions by reducing the amount of time and number of independent steps it takes to complete, verify, and settle a transaction. This is because existing payment mechanisms either assume that parties will at some time be in each other's physical presence or that there will be sufficient delay in the payment process for frauds, overdrafts, and other undesirable transactions to be identified and corrected. With electronic money, the same information that is transmitted over a

telecommunications network can serve to initiate payment, verification, and settlement.

Because the entire transaction is effected electronically, rather than by using paper exchanges, the various components of a transaction are streamlined and simplified. Although electronic payment systems allow transactions to occur in real time, other options are available. For example, transmitting information electronically also permits parties to track individual transactions and later compile them into aggregated figures. These compilations can then be settled periodically according to business needs. As a result, there is no need to follow each transaction by complex settlement procedures.⁴⁷

Electronic money offers some features that make it an attractive alternative over other payment mechanisms. Electronic money does not have to be designed to faithfully emulate all the properties of paper cash. It can be implemented to preclude some features of paper cash, such as complete anonymity, while including other desirable attributes of paper cash, such as full divisibility, assignment of limits and constraints, and links to the current owner.

A. Stored Value Card Scheme

Under this scheme, credit card-sized devices, also known as "smart cards," are electronically encoded with value using an integrated-circuit chip embedded within the card. The stored value may then be drawn down at will, by the user, to effect purchases. The smart card concept is the electronic equivalent of carrying a wallet full of cash. A personal identification (PIN) number may or may not be required. The card may be disposable or capable of being replenished with value. Current technology enables value to be replenished through an ATM terminal, a telephone equipped with a card reader, or a personal computer equipped with a card reader. Consequently, stored value cards provide a secure offline transaction alternative in environments where online processing is time consuming and expensive.

The strength of this scheme is that it avoids the need to identify the user and access the user's bank account or credit card in order to verify funds availability because the only funds available are those that are on the card. This eliminates the problem of retailers who are reluctant to accept payment by check due to concerns about funds availability. Unlike existing prepaid payment cards (such as phone cards or transit cards), stored value cards may be used to purchase an unlimited range of goods and services. Proposed systems allow card value to be transferred to other persons without involving an intermediary in what has been termed "peer-to-peer transactions."⁴⁸ Peer-to-peer transactions can also occur over a network.

Those who object to visions of a cashless economy often stress the continuing need for currency. The advent of smart cards makes this argument less tenable. Indeed, low-value, frequent transactions are those for which stored value cards are ideally suited.⁴⁹

Existing card-based payments technology uses magnetic strips. These cards suffer several weaknesses, including poor security. The greatest detraction from their use lies in the requirement of balance verification. This involves online interaction with the service provider's host computer that, in the case of small-value, high-volume transactions, is both a physical and financial burden. Smart cards, on the other hand, are free of such drawbacks.

Many electronic devices currently in use are readily convertible to the acceptance of smart cards. However, most existing implementations depend on proprietary systems that do not easily interoperate, if at all. Interoperability of payment and communications systems is necessary in order that a single terminal will be able to process any card. However, this can be self regulated. Already, a group of cross-industry participants have become engaged to develop uniform standards. MasterCard, Visa, American Express, and Mondex-all major competitors-are committed to a single transaction device.⁵⁰ Eurocard, Mastercard, and Visa have been involved in efforts aimed at specifications known as EMV which seek global interoperability.⁵¹ A truly interoperable electronic payment infrastructure would facilitate private transactions, reducing the need for intermediaries unless they provide some real added value, such as credit services.

III. Policy Concerns and Regulatory Issues

A. *The Characterization of Electronic Money*

Electronic money should be characterized as a substitute for currency. Electronic money is a replacement for currency as are other payment mechanisms such as checks, credit cards, traveler's checks, and debit cards.⁵² Yet, electronic money is potentially a perfect medium of exchange. By effecting and settling commercial transactions almost instantaneously, electronic money will simplify the complex payment system process that characterizes commerce today. The products used to effect electronic payments in small-value, high-volume transactions were not envisioned when the EFTA was passed over twenty years ago.⁵³

Because electronic money does not neatly fit into current regulatory schemes, an initial consideration is to what extent businesses engaged in handling electronic money will be characterized as "money transmitters," as defined by the Money Laundering Suppression Act of 1994,⁵⁴ and therefore be required to comply with new registration requirements. A money transmitting business must register with the Secretary of the Treasury.⁵⁵ Although the statute explicitly states certain information be reported, it reserves power to require additional information.⁵⁶

The term "money transmitting business" is broadly defined.⁵⁷ While the definition includes businesses that provide check cashing and currency exchange services, it also includes businesses that engage in providing "money transmitting or remittance services."⁵⁸ "Money transmitting services"⁵⁹ is defined very broadly and could arguably include the type of electronic payment mechanism discussed in this Note.

Specifically, the statute applies to businesses who accept "currency," or "funds denominated in the currency of any country" and transmit "currency," "funds denominated in the currency of any country," or the "value of the currency or funds" by any means, through a financial institution or other government recognized payment system network. This construction is noteworthy for two reasons. First, the statutory language is structured conjunctively stating that a "money transmitting service" is one that both accepts *and* transmits, and therefore, not a service that either accepts *or* transmits. Secondly, the form of money mechanisms included in the "accepted" prong of the statute is narrower than the form of money mechanisms included in the "transmitted" prong.

The implication of this construction is that the stored value card would not necessarily fall within the accepting category, but must fall within the transmitting category. This is because currency is generally regarded as coins and script issued by the Federal Reserve.⁶⁰ By analogy, "funds denominated in the currency of any country" is simply that country's coin and paper. It is unlikely the smart card would satisfy those definitions. However, the smart card would clearly fall within the "value of the currency or funds" definition.

But consider a scenario where the electronic money is initially denominated in nonpolitical units of value and goods and services are similarly priced. Arguably, the mechanism of the exchange-electronic money-would not satisfy accepted definitions of "currency" and "funds denominated in the currency of any country." However, at the point where conversion becomes desirable, and the value is converted into legal tender,⁶¹ the mechanism would represent the "value of the currency or funds" and fall within the contours of the definition.

Therefore, under a close statutory reading, any business that accepts smart cards for payment and desires to transmit it into traditionally recognized currency could be construed to be a money transmitting business and therefore be required to register with the Secretary of Treasury. Although this requirement is a nuisance to businesses, it should not inherently raise privacy concerns for individuals involved in the transactions. The statute does not explicitly require businesses to disclose the names of transacting parties or information about an individual transaction. It merely requires those engaged in commerce to register with the Secretary of Treasury and report anticipated gross sales revenue.

Although the typical merchant was not contemplated when this legislation was enacted, the ability to digitize

currency on an embedded chip enables unscrupulous individuals to transfer large amounts of money without notice. The Money Laundering Suppression Act of 1994 was enacted to regulate those businesses who frequently engage in "sophisticated schemes to . . . transfer large amounts of money which are the proceeds of unlawful enterprises."⁶² Furthermore, "[i]nformation on the identity of money transmitting businesses and the names of the persons who own or control, or are officers or employees of, a money transmitting business would have a high degree of usefulness in criminal, tax, or regulatory investigations and proceedings."⁶³

B. Who Should Offer Electronic Money?

Not only are new and more sophisticated products being developed and tested, they also are expected to be offered by a diverse group of banks and nonbanks. This raises fundamental questions concerning the extent to which these new products and players are covered by or subject to existing laws, and how the federal government, and individual states, will respond to development likely to fundamentally change the payments system.

When nonelectronic money was the norm, banks were the third parties that mediated transactions. That function is still necessary and vital. However, is it necessary that banks be the only issuer of electronic money, or should nonbank entities be permitted to enter this arena? As an organization of banking companies recognized, "[b]anking is essential to a modern economy; banks are not."⁶⁴ New electronic technologies challenge both traditional definitions of banking services and the ability to enforce existing laws. For example, the question of whether and how to apply the EFTA⁶⁵ and the Federal Reserve's Regulation E⁶⁶ has received considerable attention.⁶⁷

Clearly, the EFTA, as written, does not apply to all electronic money transactions. The Act's definition of "electronic funds transfer" includes "any transfer of funds . . . initiated through an electronic terminal, telephonic mechanism, or computer or magnetic tape so as to order, instruct, or authorize a financial institution to debit or credit an account."⁶⁸ To the extent that the electronic money issuer is not a "financial institution," within the Act's definition,⁶⁹ the Act will not apply. However, to the extent that a transaction accesses an account such as to load or replenish a smart card, that particular transaction is covered by Regulation E. Likewise, Regulation E "establishes the basic rights, liabilities and responsibilities of consumers who use electronic money transfer services and of financial institutions that offer these services."⁷⁰ The definition of financial institution does not include nonbank entities.⁷¹ Consequently, any transfers between nonbank entities will not be covered.

Uncertainty regarding the application of Regulation E resulted in the introduction of legislation that would exempt all stored value cards and a potentially wide range of other products, including transactions through the Internet from EFTA and Regulation E.⁷² Although this legislation did not become law, its introduction reflected industry concern that "the Federal Reserve will apply Regulation E in a heavy-handed manner."⁷³ Although the Federal Reserve has stated that some of the requirements of Regulation E are not applicable to certain of these new payment products,⁷⁴ it has warned against legislating a blanket exemption from EFTA.⁷⁵

On May 2, 1996, the Board of Governors of the Federal Reserve published proposed amendments to modify Regulation E's requirements on stored value cards.⁷⁶ However, Congress, in an amendment to the 1997 appropriations bill, directed the Federal Reserve to hold off regulating stored value cards under Regulation E for at least nine months, while it studies the impact regulation could have on development.⁷⁷

Some may argue that nonbank issuers should be required to maintain reserve requirements as are banks. However, how necessary is it to mandate reserve requirements for electronic money? Currently, limited-use stored value cards that are used for procuring such things as copies or long-distance telephone calls are not subject to reserve requirements, nor should they be. Once a stored value card is loaded with electronic money, the card becomes a cash equivalent and should not be regulated any more than cash is regulated. If the card is

loaded through a bank account, however, the account is subject to reserve requirements. On August 2, 1996, the FDIC issued a legal opinion indicating that most stored value cards do not qualify for deposit insurance.⁷⁸

Certainly, statutory definitions could be expanded to include nonbank electronic money issuers. Indeed, a European Union report on electronic payments noted that similar economic rationale exists for applying bank regulatory requirements to nonbank issuers:

In economic terms, it is clear that the money received by the issuer of an electronic purse is a bank deposit. It is indeed a claim which the card-holder (or account holder) has on a third party and which can be used to make cashless payments to a wide range of providers of goods and services. Such deposits contrast with deposits which are payments in advance for which the range of goods or services to be purchased is well defined and limited in scope. Therefore, in economic terms, the reasons which led public authorities to reserve deposit-taking to a specific category of institutions should also apply to the issuers of electronic purses.⁷⁹

Because electronic money allows a transaction to clear almost instantaneously, diligence is required to account for electronic cash and track redemption patterns. This need not solely be a function of banks. Nonbank issuers are capable of managing the exchange function. However, these free-market clearing agents effectively act as central banks that arguably require each issuer to maintain an adequate balance between electronic money outstanding and the chosen reserve backing. Therefore, regulations on clearing and redemption may be necessary for smooth operation as they provide a safeguard against over-issuance.

However, the policy implications of electronic money extend beyond the realm of banking law, as the banking industry, itself, has recognized.⁸⁰ As technology advances, banks are becoming "information service" companies.⁸¹ "The rules, the regulations, the technology, and the different issues [banks] have to deal with have transcended what normally would confront [a banking] institution."⁸² Furthermore, Congress and state legislatures should review the basic legal concepts that define banking and their methods for preventing fraud and unlicensed banking activity. Moreover, because electronic information that is transacted on the Internet shows little respect for national borders, these issues likely will require the coordinated attention of authorities in various countries.

With electronic money payment systems, the issuer is responsible for implementing and administering the system and has no direct involvement with customers. Aside from coordinating the activities of equipment suppliers, service providers and card sellers, the issuer manages billing, security, and reporting requirements as well as arranging for the ultimate banking of funds.

The rewards for the issuer are many. First, the issuer retains the "float,"⁸³ as well as the value remaining on any lost or destroyed card. Secondly, the issuer collects transaction fees from service providers and license fees from equipment suppliers. Third, the issuer sells ancillary services including advertising on the cards and any frequent buyer schemes that are used to build and maintain user loyalty. An obvious candidate for the role of issuer is a financial institution, perhaps even the central bank, but there is no reason why a nonfinancial firm cannot perform the task.

C. Should These New Payment Systems Be Regarded as Telecommunications Networks or Banking Networks?

Technological changes will cause a convergence among the different kinds of policy domains that exist in the current regulatory scheme. As technological changes erode the historical distinctions between banking and nonbanking entities, regulations covering electronic transactional systems will be complex webs of connections among many different domains. Previously separate banking and nonbanking functions will become increasingly connected. Clearing organizations that were developed for banks and certain transactions need to be opened up to new participants and made suitable for supporting less formal markets. The problem for banks is the existence of regulations that prohibit diversification⁸⁴ and limit the use of bank-owned telecommunications networks to the transmission of financial data or information related to banking.⁸⁵

Even when banks maintain their position as a financial services provider and payment system intermediary, when offering electronic commerce services, new issues arise. The integration of telecommunications and financial services strains traditional regulatory practices in both fields. No longer are there distinct boundary lines between the two industries. For example, "when a bank offers an online transactional service to customers, there may be some debate as to whether it is providing a regulated banking service, a telecommunications service that might be regulated (depending on the jurisdiction in which it is offered), an unregulated information processing service, or some hybrid service that has never been the subject of regulation."⁸⁶

This sets the stage for conflict between regulated financial institutions and other nonregulated companies that, because they are not regulated, may be better able to respond to the development and implementation of new payment technology. This technology could therefore allow nonbanks to take bank customers away without banks being able to effectively respond.

The chief implication of electronic payment mechanisms for financial institutions is the need to compete with a range of nonfinancial institutions, including telecommunications companies, supermarkets, etc., in the provision of payment services. More so than is the case already, financial institutions will depend upon information technology to produce their services. Accordingly, their main competitors will arise in the information and telecommunications industries.

D. Security Concerns

Several electronic payment features highlight the potential conflicts between concern for security and greater ability to resolve disputes and protect against fraud and wrongful manipulation. Electronic payment systems are capable of establishing electronic audit trails with all of the features of nonelectronic information. For example, money flows can take place instantly among multiple parties and typical transactions can involve message confirmations and verifications of all transactions.

On the one hand, sound practice requires the ability to track and verify that the proper exchanges occur—ensuring that only authenticated parties and payment mechanisms are involved in the exchange, and that they exchange only those items for which they are authorized. Authorization has traditionally been accomplished by providing the paying party with a receipt that represents an undisputable proof of payment to the intended recipient.

On the other hand, many parties want the option of anonymous financial transactions. The privacy of the individual must be respected—profiles of individual consumer behavior by tracing spending patterns potentially infringes this right. As a result, the consumer must be guaranteed that any information exchanged will be transmitted only to properly authenticated parties and only to the extent to which they are authorized to receive the information. The challenge with electronic money is to establish nonrefutability—all the while keeping the parties to the transaction confidential and anonymous.

Trust remains an essential component in transacting business. Since every transaction in electronic networks may be recorded, and traces reconstructed from even partial data, assurances may have to be based on trusted management practices rather than technological capabilities.

There are some improper uses of cash which likewise can be replicated by electronic money. These include illicit uses, such as transactions in black markets and illegal transactions, for which cash has long been recognized as a lubricant. Anonymity—the key feature of cash in the eyes of illicit transactors—can be preserved with smart cards, unlike other forms of verifiable electronic payment mechanisms such as debit cards and credit cards. For example, the user of an anonymous smart card is not identified at the point-of-sale when the card value is discharged. The recipient merely obtains value from the issuer which is eventually cleared through a clearing system, without the user being identified.

Thus, time, attention, and resources may need to be committed to the control and prevention of such serious threats as deception, fraud, embezzlement, and money laundering. Useful tools to combat these threats include

encryption, passwords, digital signatures, and the detection of anomalous and suspect patterns. There will likely be tradeoffs in cost and security, and there will continue to be issues of compliance to security requirements and even to adherence to simple security practices. This area promises to be more challenging given the issues of rapid technology evolution and the ability of people to keep pace.

Electronic commerce may prove a major driver of changing views about many things today taken for granted, ranging from the security of physical facilities to the content of education. Certainly, there will be an interplay among these things and the rate at which electronic commerce evolves and returns its projected benefits.

E. Monetary Policy Concerns

The economic implications depend upon the extent to which cash is displaced by electronic means of payment. The Federal Reserve earns profits by issuing currency, which pays no interest, and purchasing interest-bearing assets with the proceeds. Known as seignorage, these profits are added to the general revenue raised by governments through taxes, and help to fund public expenditures.⁸⁷ Perhaps the most direct implication of a general move to electronic money is the loss of seignorage as a convenient source of public revenue. However, this could be offset by government involvement in the issuance of smart cards. Furthermore, if the government was concerned about replacing its revenue from seignorage, it could do so by levying transactions taxes on the use of the electronic money by charging a tax at the time of issue.

Alternatively, reserve requirements could be imposed on issuers by granting the central bank the exclusive right to own and operate the electronic payments network, including the sale and distribution of smart cards. Naturally, any decision to do any of these matters turn on issues besides public revenue implications, including implications for competitiveness and innovation within the payments system.

IV. Telecommunications Law as a Regulatory Model

The passage of the Telecommunications Act of 1996 (‘96 Act)⁸⁸ represents the most comprehensive overhaul of the nation's telecommunications law in more than sixty years. The new law sets both strict guidelines and deadlines for the FCC to deregulate one of the most highly regulated industries in history.⁸⁹ The ‘96 Act contains the dual objectives of increasing competition and lessening governmental regulation. The ‘96 Act establishes open competition by removing state and federal market entry barriers and grants the FCC authority to preempt any regulation that does so.⁹⁰ One key aspect of the ‘96 Act eliminates FCC oversight by generally directing the agency to forbear from regulating telecommunications carriers or services where such regulation is no longer necessary to protect the public interest.⁹¹

As a result, the communications industry is expected to be further transformed by eliminating regulatory barriers and encouraging competition in nearly every sector.⁹² As structural barriers come down, existing communications companies and new players will have opportunities to expand into services and businesses previously closed to them. The ‘96 Act does, however, anticipate a role for the government in guaranteeing sufficiency of service to customers of modest means and to those who live in rural and remote areas of the country.⁹³

The original Communications Act of 1934 (‘34 Act)⁹⁴ was enacted at a time when communications technologies were discrete and addressed different consumer needs. Accordingly, the resulting regulatory regime was designed to compartmentalize the various sectors of the telecommunications industry. Moreover, the provision of universal service was a primary concern which meant that communications industry sectors were regulated in roughly the same manner as other utilities were regulated. As a result, communications technology did not evolve significantly.

The ‘34 Act waived the federal antitrust laws and instead delegated the responsibility of regulating and supervising the expansion of the telephone system, which was dominated by AT&T, to the FCC.⁹⁵ Market entry was allowed only to those entrants who demonstrated that the "public convenience and necessity" required

their entry. Arguably, "[c]ongress and the FCC were more concerned with obtaining ubiquitous universal service than promoting competition."⁹⁶ Because of the desire to provide universal service, the telephone industry was deemed a public utility and essentially a natural monopoly.⁹⁷ In effect, the '34 Act allowed AT&T to dominate the market in return for being regulated. However, as technologies advanced and converged, the potential for competition became more apparent.

Just as the '96 Act addresses the realities of today's converging telecommunications marketplace by eliminating barriers that inhibit or preclude the entry of new competitors into the various industry sectors, any regulation of electronic money must strive to do the same so that creativity and innovation are not stifled. This is because regulation shapes the structural characteristics in which firms do business. The successful advancement of electronic money, and stored value cards in particular, will require the cooperation and support of federal and state regulators as well as self-regulation by the industry. As such, regulatory activity must be pragmatic while at the same time tolerating institutional experimentation.

Intense competition in the smart card market will produce significant benefits for consumers. Competition will likely produce a greater choice of smart card providers, lower prices, better quality service, and new services and features. The regulatory framework adopted will impact the development of smart card technology. If a competitive full service marketplace is to develop, the government must ensure that barriers to offering this payment mechanism are comparably low so that consumers benefit from real competitive alternatives.

The initiatives being offered at this time are too ambiguous and unpredictable to appropriately address the issues raised by electronic money. It appears that the federal government is headed toward tailoring existing regulations to fit this new technology. Rather than establishing a regulatory framework, the federal government has effectively adopted a wait-and-see approach. The lack of any regulations attempting to address the issues raised could unintentionally slow the development and impair consumer acceptance.

Regulatory action should be formulated that flexibly adapts itself to market conditions. The regulatory scheme should be flexible enough to permit adjustments in the intermediate term. It is unclear, for instance, how to balance promoting competition and innovation while at the same time ensuring against the failure of an issuing unregulated institution. To what extent should regulators be concerned about risks that are introduced in the payment system, particularly from nonfinancial entities, and can nonfinancial entities be expected to accept the same level of responsibility as banks without regulation?

Congress must enact legislation that provides consistent treatment for smart card payment mechanisms regardless of whether the mechanism is provided by a bank or some other firm. Certainly, the policy adopted must be one such that competitors can compete on a level playing field. Legislation should also aim at eliminating potential conflicting or duplicative regulatory obligations at the state and federal levels.

Conclusion

Very important long-term technical changes are beginning to affect the payment system, especially the continuing decline in computing costs and in the physical size of powerful computer chips, along with the associated spread of powerful telecommunications technologies.⁹⁸ The widespread availability and acceptability of computers in both the home and the workplace has accelerated the process.⁹⁹ At the same time, the cost of communications has been falling dramatically, broadly opening up markets worldwide.¹⁰⁰ These trends have a marked impact on the payment system, and offer potentially significant avenues for improvement of the efficiency of existing arrangements and for the creation of new payment mechanisms.

Part of the difficulty in applying existing regulatory standards is that, in order to achieve innovation, many participants are likely to be nonfinancial institutions and therefore beyond the ambit of existing financial transaction regulations. In order to ensure that innovation is not constrained and opportunities are readily available to consumers and businesses through competitive sources, the relationship between technological

development, business development, and regulation becomes increasingly important. Therefore, regulators must manage the transition to an open marketplace by creating an environment that will foster investment and preserve the legitimate dynamic and competitive aspects of the payment system industries.

As technological changes permit participants to alter their relationships, existing legal norms will necessarily become outdated. Indeed, technology quickly outstrips the capacity of any legal system to adapt to change.¹⁰¹ Consequently, policymakers should avoid thinking of the payment system as a single technology. Instead, they should visualize an environment encompassing different technologies in a competitive market that offers consumers and businesses many choices, including choices among payment methods, among payment providers, and possibly among payment risks.

There will be inevitable uncertainties when implementing even the best-intentioned regulations. This is because every regulatory policy has a host of consequences that are often unanticipated and even undesirable. This can lead to unexpected problems, especially considering the rapidly evolving technology in the industry.

Technological advances and declining computing costs have created an environment that encourages innovation and cross-industry competition in payments system technology. The boundaries that once separated the distinct industries of banking and telecommunications information services are eroding. Indeed, emerging technologies are causing the banking and telecommunications industries to converge so that there will soon be ubiquitous access to payment systems through multiple delivery channels. Because regulatory action may impede competition, any regulatory intervention must incorporate countervailing principles that promote competition.

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1. Electronic commerce-

integrates communications, data management, and security services to allow business applications within different organizations to automatically interchange information. Communication services transfer the information from the originator to the recipient. Data management services define the interchange format of the information. Security services authenticate the source of information, verify the integrity of information received by the recipient, prevent disclosure of the information to unauthorized users, and verify that the information was received by the intended recipient.

Information Infrastructure Technology and Applications (IITA) Task Group, National Coordination Office For High Performance Computing and Communications 13-14 (1994), *reprinted in Electronic Commerce and the NII: Draft for Public Comment* (visited Jan. 6, 1996) <http://iitfc.nist.gov:94/doc/Electronic_Commerce.html>.

2. The ACH payment mechanism was established as an electronic alternative to the traditional paper based check collection system. Today it is used to conduct high volume repetitive transactions such as those involved in direct deposits, social security payments, and automatic bill-paying services. *See* 2 Furash & Company, *Banking's Role in Tomorrow's Payment System Overview* 1, 29 (1994).

3. U.S. Dep't of the Treasury, Financial Crimes Enforcement Network, *Exploring the World of Cyberpayments: An Introductory Survey* 5, Sept. 27, 1995 (hereinafter *FinCEN*).

4. David B. Humphrey, *Payment Systems: Principles, Practice, and Improvements* 11 (1995).

5. *Id.*

6. CHIPS is a private sector system owned and operated by the New York Clearing House Association, an organization of banks in New York City. CHIPS is an online, real-time electronic payment system that transfers and settles transactions. *See* 2 Furash & Company, *supra* note 2, at 3, 61-63.

7. SWIFT is a not-for-profit cooperative with headquarters in Brussels, Belgium. SWIFT is actually a financial messaging system rather than a payments system. The system facilitates interbank transfer of information but presupposes a separate system for effecting the payment. *See id.* at 2, 55-57.

8. Fedwire is a real time payments system operated by the Federal Reserve for financial institutions that have either reserve or clearing accounts at a Federal Reserve Bank. *See id.* at 2, 45-47.

9. Check truncation is a hybrid paper/wire transfer system that provides for the interruption of the transfer of the paper and the substitution for it by an electronic transfer. *See id.* at 13-16.

10. *See supra* note 2.

11. 15 U.S.C. § 1691 (1994 & Supp. I 1995).

12. 15 U.S.C. §§ 1601-1667e.

13. 12 C.F.R. pt. 226 (1996).

14. 15 U.S.C. §§ 1693-1693r (1994).

15. 12 C.F.R. pt. 205 (1996).

16. These advances include "improved information technology, broader competitive access to networks and information, and the reduced cost and increased user-friendliness of both general-purpose computers and specialized devices." Cross-Industry Working Team, *Electronic Commerce in the NII*, (visited Mar. 28, 1997) <http://www.cnri.reston.va.us:3000/XIWT/documents/EComm_doc/ECommPaper.html#Introduction> (on file with author).

17. A survey conducted in July 1996 indicated that the Internet connects more than 12.88 million hosts-each of which may connect thousands of separate computers-in 176 countries. Network Wizards, *Internet Domain Survey-July 1996* (visited Jan. 30, 1997) <<http://www.nw.com/zone/host-count-history>> and <<http://www.nw.com/zone/iso-country-codes>>. A survey conducted six months earlier revealed there were 9.47 million hosts; four years ago, there were fewer than one million hosts. Network Wizards, *Internet Domain Survey-July 1996* (visited Jan. 30, 1997) <<http://www.nw.com/zone/host-count-history>>.

The Internet is a decentralized information distribution network, accessible by computer. There is no central authority through which all information must pass. It operates through independently functioning computer systems that are connected by communicating in a common protocol, or language. The Internet is also unregulated. It operates twenty-four hours a day, can be instantly accessed, is inexpensive, and contains information that is downloadable for future reference. It costs much less to connect to the Internet than to lease telephone lines accessed by modems, because the user typically connects through local phone lines. Hence, long-distance transactions take place with no long- distance charges. Because of the decentralized structure, it is virtually impossible to measure a user's activity based on volume and distance of transactions, so it is likely charges will continue in the form of an hourly, daily, or monthly access fee.

The Internet is extremely reliable. It was developed by the Department of Defense in the late 1960s to establish a communication vehicle that would survive military casualties. The design task was to link military officers at command posts with remote battlefields thousands of miles away. Because wartime bombing might destroy any individual computer and its operators, the network needed to function no matter what pieces remained. In order to accomplish this, transfer protocols route information around breakdowns in the network. When one part of the network requests information from another, the transmission control protocol (TCP) breaks up the information into pieces and numbers them for reassembly. The Internet protocol (IP) then directs each piece from computer to computer. The process is inefficient, but highly reliable-pieces may travel by different paths, take longer than necessary, and arrive out of order, but they arrive at the proper destination. While the technology behind the Internet is remarkable, it was designed to link together a few thousand people. However,

the TCP/IP protocols allow the Internet to be expanded with ease. Instead of straining the system, additional sites represent new transmission routes. See Andrew Grosso, *The National Information Infrastructure*, 41 Fed. B. News & J. 481 (1994).

18. According to one source, it is estimated that "44 million households own computers, 30 million of them have modems, and 14 million have some type of online access." See Thomas P. Vartanian, *Many Evolutionary Factors Point One Way: The Internet*, Am. Banker, Dec. 23, 1996, available in 1996 WL 14014701.

19. Banks lease private digital communications lines to establish bank owned telecommunications networks for transmitting banking data between branches, ATMs, and large customers. These private leased lines offer high-volume capacity, security, and high speed in their point-to-point connections. Existing regulations limit the use of bank-owned telecommunications networks to the transmission of banking data. See 12 C.F.R. § 225.25(b)(7) (1996). Many banks also offer home banking services which allow customers to access bank computers from remote locations by using public phone networks.

20. First Virtual website (visited Jan. 30, 1997) <<http://www.fv.com>>.

21. DigiCash website (visited Jan. 30, 1997) <<http://www.digicash.com>>.

22. CyberCash website (visited Jan. 30, 1997) <<http://www.cybercash.com>>.

23. NetCash website (visited Jan. 30, 1997) <<http://www.netbank.com/~netcash>>.

24. Mondex website (visited Jan. 30, 1997) <<http://www.mondex.com>>.

25. NetChex website (visited Jan. 30, 1997) <<http://www.netchex.com/index.html>>.

26. See Humphrey, *supra* note 4, at 4.

27. See The Federal Reserve Bank of Minneapolis, *The History of Money* (visited Mar. 28, 1997) <<http://woodrow.mpls.frb.fed.us/econed/curric/history.html>> [hereinafter *History*].

28. L. Jean Camp et al., *Token and Notational Money in Electronic Commerce* (visited Jan. 6, 1996) <<http://www.cmu.edu/afs/cs.cmu.edu/user/jeanc/www/usenix.html>> (on file with author).

29. Theoretically, because currency contains a unique serial number, each transaction could be tracked and procedures could be implemented to ensure its rightful owner exercised dominion and control until the currency was transferred. But to do so would involve enormous administrative facilities. Without question, the benefit-cost ratio would be unacceptable.

30. See *History*, *supra* note 27.

31. *Id.*

32. See The Federal Reserve Act, 12 U.S.C. § 225a (1995). Congress created the Federal Reserve System in 1913 to increase commerce by improving the efficiency of the payment mechanism. The Federal Reserve Act created a central bank with a nationwide check collection presentment network. "The Fed provides check collection and other services without explicit charges to member banks. In return, member banks maintain reserves in non-interest bearing accounts at the Federal Reserve. This arrangement created a wholesale check clearing market in which member banks for a fee, provided non-member financial institutions access to the Fed's collection network. It also gave the Federal Reserve *de facto* regulatory power through its ability to enact rules for member banks." 2 Furash & Company, *supra* note 2, at 7-8.

33. The most common mechanism used to instruct a bank to transfer demand deposit money between accounts is a check. A complex system involving the Federal Reserve as a clearinghouse supports check clearing when

accounts are held at different banks. Demand deposit balances are also transferred electronically through automated teller machines (ATMs), wire transfers, and Electronic Funds Transfer (EFT).

34. *See* Humphrey, *supra* note 4, at 3.

35. *Id.* at 4.

36. 1 Furash & Company, *Banking's Role in Tomorrow's Payment System: Ensuring a Role for Banks 1* (1994).

37. *Id.*

38. *Id.*

39. *See* Humphrey, *supra* note 4, at 4.

40. *Id.*

41. The clearing function is a process involving depositing, sorting, presentment, and inspection. At its simplest level, the clearing process occurs in the following order. The collecting bank sorts the check along with others collected, and then presents this check and others at the checkwriter's bank for payment. The paying bank inspects the check and determines whether there are sufficient funds in the checkwriter's account to cover the check. If funds are insufficient, the check is returned through the system, and eventually to the depositor who originally received the check. About 1% of all checks are returned for insufficient funds. *Id.*

42. *Id.*

43. Importantly, these commercial bank reserve accounts are noninterest earning accounts with the Federal Reserve. The clearing and settlement function typically occurs overnight. As a result, the majority of the value of the deposited checks is available the next day. However, the number of days can take longer depending on the time of day the check is deposited and the distance between the collecting and paying banks. The time lag of the settlement function has implications on float. One issue of payment system efficiency raised by payment system innovations is:

the uncompensated and inadvertent shifting of credit and liquidity risks through payment mechanisms and associated institutions. Timing gaps . . . in the giving and carrying out of payment instructions in the exchange of assets, including monetary claims, and in the discharge of underlying legal obligations can generate inadvertent interest free loans-float, and . . . lead to the shifting of credit and liquidity risks. . . . [A] fully real-time electronic transaction, clearing and settlement system, for example one with no float that approximates the currency model, would represent . . . the ultimate in payment system efficiency. Such a system might reduce or eliminate the credit risks that invariably arise due to timing gaps in the payment process. [However], [i]ncreases in payment system efficiency imply additional costs, particularly costs resulting from increased capital investments in computer and communications technologies. Like all capital investments, the return must exceed the cost of capital, if efficiency is in any meaningful sense to be improved.

Remarks by Alan Greenspan, Chairman Board of Governors of the Federal Reserve System at the Conference on Payment Systems Research and Public Policy: Risk, Efficiency, and Innovation (Dec. 7, 1995) (visited Mar. 28, 1997) (transcript available at <<http://woodrow.mpls.frb.fed.us/info/speeches/ag12-95.html>>).

44. *See* Humphrey *supra* note 4, at 4.

45. Thomas P. Vartanian, *Key Question for Emerging Systems: Where is the Money?*, *Am. Banker*, June 17, 1996, available in 1996 WL 5565107.

46. Stored-value cards open up opportunities for merchants to increase revenues in formerly cash only venues

such as convenience stores, movie theaters, newsstands, and fast food restaurants.

Furthermore, with an efficient and effective electronic payment system, authors displaying information on the Internet would have the capability to charge access or user fees for information. As one commentator recognized, "The enormous commercial potential of the Internet is currently stunted by the lack of a widely accepted and secure means of transferring money on line. Thousands of would-be sellers of digital information now have to pay one another off of the Net, incurring relatively costly transaction expenses on phone calls and postage." Benjamin Wittes, *The Dark Side of Digital Cash*, Legal Times, Jan. 30, 1995, at 1.

47. Robert R. Bruce et al., *The Telecom Mosaic: Assembling the New International Structure* 185 (1988).

48. Peer-to-peer transactions occur when individual users exchange electronic money. This scheme is without an owner and unregulated just as exchanging traditional currency is. However, this system could be designed with no universal unit of accounting especially when there are no dealings with intermediaries or governments.

49. For example, loose change to purchase a newspaper, place a telephone call, pay bus fare, or purchase vending items, can readily be replaced by this technology. Stored value cards are equally well-suited for purchases at fast food outlets, convenience stores, and grocery stores as well for entertainment, taxis, fuel, or parking.

50. Valerie Block, *Mondex Shows 1 Terminal Can Read All Sorts of Smart Cards*, Am. Banker, May 17, 1996, available in 1996 WL 5564298.

51. *Id.*

52. While many think of credit cards as a replacement for money, they are, in fact, a credit transaction. Debit cards, on the other hand, are the equivalent of money, but they fall under the purview of the EFTA, since they contain no embedded value and are thus subject to verification.

53. 15 U.S.C. §§ 1693-1693r (1994). The EFTA is the seminal federal statute governing electronic funds transfers. Enacted in 1978, the EFTA establishes the rights, liabilities, and responsibilities of parties to electronic funds transfers. Transfers governed by the Act include transfers initiated through ATM machines, point-of-sale terminals, automated clearinghouses, telephone bill-payment systems, and home banking programs. See 61 Fed. Reg. 19,662 (Federal Reserve) (1996) (codified at 12 C.F.R. pt. 205).

54. 31 U.S.C. § 5330 (1994).

55. 31 U.S.C. § 5330(a)(1).

56. Section 5330(b) provides:

(b) Contents of registration-The registration of a money transmitting business under subsection (a) shall include the following information:

(1) The name and location of the business.

(2) The name and address of each person who-

(A) owns or controls the business;

(B) is a director or officer of the business; or

(C) otherwise participates in the conduct of the affairs of the business.

(3) The name and address of any depository institution at which the business maintains a transaction account (as defined in section 19(b)(1)(C) of the Federal Reserve Act).

(4) An estimate of the volume of business in the coming year (which shall be reported annually to the Secretary).

(5) Such other information as the Secretary of the Treasury may require.

31 U.S.C. § 5330(b).

57. Section 5330(d)(1) provides:

(1) Money transmitting business-The term "money transmitting business" means any business other than the United States Postal Service which-

(A) provides check cashing, currency exchange, or money transmitting or remittance services, or issues or redeems money orders, travelers' checks, and other similar instruments;

(B) is required to file reports under section 5313; and

(C) is not a depository institution (as defined in section 5313(g)).

31 U.S.C. § 5330(d)(1).

58. See 31 U.S.C. § 5330(d)(1)(A).

59. Section 5330(d)(2) provides:

(2) Money transmitting service-The term "money transmitting service" includes accepting currency or funds denominated in the currency of any country and transmitting the currency or funds, or the value of the currency or funds, by any means through a financial agency or institution, a Federal reserve bank or other facility of the Board of Governors of the Federal Reserve System, or an electronic funds transfer network.

31 U.S.C. § 5330(d)(2).

60. 31 U.S.C. § 5103 (1994).

61. 31 U.S.C. § 5103 defines legal tender as "United States coins and currency (including Federal reserve notes and circulating notes of Federal reserve banks and national banks)."

62. Money Laundering Suppression Act 1994, Pub. L. No. 103-325, § 408(a), 108 Stat. 2243, 2249-52.

63. *Id.*

64. 1 *Furash & Company, supra* note 36, at 17.

65. 15 U.S.C. §§ 1693-1693r (1994). The Electronic Funds Transfer Act, enacted in 1978, establishes the rights, liabilities, and responsibilities of parties to electronic funds transfers. Transfers governed by the Act includes transfers initiated through ATM machines, point-of-sale terminals, automated clearinghouses, telephone bill-payment systems, and home banking programs. See 61 Fed. Reg. 19,662 (Federal Reserve).

66. 12 C.F.R. § 205. Among other things, Regulation E limits consumer liability for unauthorized electronic withdrawals from their accounts, provides procedures for resolving errors, and requires institutions to provide disclosures, terminal receipts, and account statements.

67. For example, see FinCEN *supra* note 31, at 19-21; *Statement Before the Subcomm. on Domestic and Int'l*

Monetary Policy of the Comm. On Banking and Fin. Service, 104th Cong., (1995) (testimony of Alan S. Blinder, Vice Chairman, Board of Governors of the Federal Reserve System), available at <http://woodrow.mpls.frb.fed.us/info/speeches/bli11_95.html> [hereinafter *Blinder*].

68. 15 U.S.C. § 1693a(6).

69. A "financial institution" is "a State or National bank, a State or Federal savings and loan association, a mutual savings bank, a State or Federal credit union" 15 U.S.C. § 1693a(8).

70. 12 C.F.R. § 205.1(b).

71. "Financial institution means a bank, savings association, credit union, or any other person that directly or indirectly holds an account belonging to a consumer, or that issues an access device and agrees with a consumer to provide electronic fund transfer services." 61 Fed. Reg. 19,669 (1996) (to be codified at 12 C.F.R. § 205.2(2)(i)).

72. Financial Institutions Regulatory Relief Act of 1995, H.R. 1858, 104th Cong.; *see also* H.R. 2520, 104th Cong. (1995); S. 650, 104th Cong. (1995).

73. *See Blinder, supra* note 67.

74. *Id.* ("For example, it makes little sense to require either printed receipts at ordinary vending machines or periodic statements detailing small transactions.")

75. *Id.*

76. 61 Fed. Reg. 19,696 (1996).

77. Omnibus Consolidated Appropriations Act, 1997, Pub. L. No. 104-208, § 2601, 1996 U.S.C.C.A.N. (110 Stat.) 1363.

78. Notice of FDIC General Counsel's Opinion No. 8, 61 Fed. Reg. 40,490 (1996).

79. Working Group on European Union Payments Systems (WGEUPS), *Report to the Council of the European Monetary Institute on Prepaid Cards* 7 (1994).

80. *See, Panel One: Information Issues: Intellectual Property, Privacy, Integrity, Interoperability, and the Economics of Information*, 48 Fed. Comm. L.J. 5, 6 (1995) ("We have been involved in electronic cash products, Smart cards, Smart phones, and credit cards All of these issues are governed by things other than banking law. Banking law says nothing about this." Statement of P. Michael Nugent, Vice-President and General Counsel for Technology and Intellectual Property, Citicorp).

81. *Id.* at 7.

82. *Id.*

83. In this context, float means the interest earned on the value stored within the card.

84. Banks are also prohibited from operating telecommunications systems except for transmitting financial information. 12 C.F.R. § 225.25(b)(7) (1993).

85. In general, a bank holding company cannot own a telecommunications entity unless that entity is primarily in the business of transmitting financial data or information related to banking. 12 C.F.R. § 225.25(b)(7)(i)(1993).

86. Bruce et al., *supra* note 47, at 187.

87. The value of seignorage earned by the United States Treasury in a given year is the change in the face value of the note issue plus interest earned on assets purchased by the government from proceeds of its note issue less the annual cost of printing and maintaining the note issue. For example, in 1994, the Federal Reserve turned over almost \$20 billion of its earnings to the Treasury, most of which was derived from seignorage. *See Blinder, supra* note 67, at 1.

88. Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56 (to be codified at scattered sections of 47 U.S.C.).

89. The announced purpose of the Act is "to promote competition and reduce regulation in order to secure lower prices and higher quality services for American telecommunications consumers and encourage the rapid deployment of new telecommunications technologies." *Id.* The conference report stated the purpose of these new laws was to provide for a pro-competitive, deregulatory national policy framework designed to accelerate rapidly private sector deployment of advanced telecommunications and information technologies and services to all "mericans by opening all telecommunications markets to competition." H.R. Conf. Rep. No. 104-458, at 113 (1996), *reprinted in* 1996 U.S.C.C.A.N. 124 (Mar. 1996).

90. The '96 Act provides that "[n]o State or local statute or regulation, or other State or local legal requirement, may prohibit or have the effect of prohibiting the ability of any entity to provide any interstate or intrastate telecommunications service." 47 U.S.C.A. § 253(a) (1996). The '96 Act also requires the FCC to establish a procedure through which it will identify and eliminate local market barriers. *Id.*, 47 U.S.C.A. § 257(a). This section requires the FCC to complete such a proceeding within 15 months of the Act's enactment.

91. Section 401 of the Telecommunications Act provides, in relevant part:

Regulatory Flexibility-Notwithstanding section 332(c)(1)(A) of this Act, the Commission shall forbear from applying any regulation or any provision of [the Communications Act of 1934, as amended] to a telecommunications carrier or telecommunications service, or class of telecommunications carriers or telecommunications services, in any or some of its or their geographic markets, if the Commission determines that-

- (1) enforcement of such regulation or provision is not necessary to ensure that the charges, practices, classifications, or regulations by, for, or in connection with that telecommunications carrier or telecommunications service are just and reasonable and are not unjustly or unreasonably discriminatory;
- (2) enforcement of such regulation or provision is not necessary for the protection of consumers; and
- (3) forbearance from applying such provision or regulation is consistent with the public interest.

Telecommunications Act, sec. 401(a), 110 Stat. at 128.

92. For example, the '96 Act mandates interconnection arrangements between carriers. 47 U.S.C.A. § 251(c)(2). Every telecommunications carrier is required to interconnect with other carriers by enjoining carriers from installing "network features, functions, or capabilities" that prevent telecommunications interconnectivity. § 251(a). The purpose of this interconnection requirement is "to ensure the ability of users and information providers to seamlessly and transparently transmit and receive information between and across telecommunications networks." *Id.* § 256(a)(2).

93. *See* 47 U.S.C.A. 254.

94. Communications Act of 1934, ch. 652, 48 Stat. 1064 (codified as amended in scattered sections of 47 U.S.C.).

95. *See* Ilene Knable Gotts & Alan D. Rutenberg, *Navigating the Global Information Superhighway: A Bumpy Road Lies Ahead*, 8 Harv. J.L. & Tech. 275, 280 (1995).

96. *Id.*

97. A natural monopoly exists when a single company can provide the next unit of service at a lower cost than can two or more companies.

98. Computer technology has been improving at the rate of 25% per year for two decades. Michael Dertouzous, *Communications, Computers, and Networks*, Sci. Am., Sept. 1991 at 62, 63.

99. An estimated 60% of households earning at least \$35,000 have personal computers-38% of these have modems, 18% use online services, and 10% access the Internet. *Currency of the Internet Realm? So Far, It's Plastic*, Am. Banker, Sept. 21, 1995, at 1, 1.

Currently 25 million Americans have Internet access. Two million of these have browsers. In addition, Microsoft Windows 95 has a built-in browser. Internet usage is growing at a rate of 15% per month. WebTech, Inc., *Internet Banking and Security* (May 17, 1995). <<http://www.sfnb.com/wpaper.html>>.

100. Computing costs have been cut in half every three years since 1950. Lawrence Tesler, *Networked Computing in the 1990s*, Sci. Am., Sept. 1991, at 86, 88.

101. See Bruce et al., *supra* note 47, at 186.