

THE PURPOSE OF THIS PAPER IS TO PROVIDE A STARTING POINT FOR BANKS AND THE GOVERNMENT TO BEGIN DISCUSSING "DIGITAL CASH" AND OTHER POTENTIAL ELECTRONIC PAYMENT MECHANISMS.
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**The History of Banks, the U.S. Government
& Payment System Improvements:**

**The past's implications for future payment systems
including digital cash.**

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The History of Banks, the U.S. Government & Payment System Improvements

In addition to their central purpose of facilitating commerce, banks have historically been the primary watchdogs of the United States payment system against attacks by counterfeiters & fraud artists. Banks have also recently been made responsible for detecting money-laundering and other related financial crimes. Banks make it easier for individuals and firms to engage in trade, while minimizing the risks to all parties involved, including the government.

Banks manage both the daily operation and long-term evolution of the payment system. More than \$2 trillion currently moves electronically each day between U.S. institutions. Banks facilitate commerce between parties with no prior relationship by providing letters of introduction or credit and bank guarantees. Banks have created numerous payment credit risk reduction mechanisms to reduce the likelihood that the failure of major credit counter-parties (i.e. financial institutions [FIs] w/ each other, FIs w/ large companies, FIs w/ governments) would cause the failure of the entire payment system through a domino effect. Banks have cooperatively developed these mechanisms to minimize risk, increase efficiency and convenience.

Prior to the establishment of our current dual banking system under the National Currency Act of 1863, banks issued private banknotes or private-label currency backed by U.S. Government minted gold and silver coins to fund their activities. Widespread counterfeiting and lack of familiarity with a particular bank and its notes caused severe problems with acceptance of these instruments outside of a bank's immediate environs. This method of funding has been replaced with deposit liability funding. The Government's issuance of Gold & Silver Certificates eased the problems with paper currency acceptability. Later Federal Reserve Notes replaced these instruments.

Under "par checking," prior to the establishment of our current checking system, checks and other draft instruments were not widely accepted or widely used by consumers and many firms because of credit risk and extremely high processing costs. The changes which increased the use of these instruments by individuals and firms included the American Bankers Association's issuance of ABA Routing Numbers, establishing bank clearing house associations, the creation of Federal Reserve check clearing operations and crafting of federal regulations.

Payment instruments must be widely accepted, convenient, cost effective, safe and confidential to assure wide usage. The legitimate public policy interests of the government must also be recognized. Cooperative efforts between banks as an industry, and between banks and the government have made current payment instruments successful & widely used, and can make future payment mechanisms similarly successful.

Payment certification, netting, and settlement must be performed only by banking industry regulator supervised institutions in order to assure that the interests of the US taxpayer and government in the soundness of the currency, and the safety of financial institutions, is sufficiently secured.

NII-Future Payment Mechanisms

After entertainment and education related services, home banking is the most common feature/service mentioned in discussions regarding the "National Information Infrastructure" (NII) or "information superhighway". Home banking by itself, and as part of electronic commerce (e.g. home shopping) will require extensive security resources and payment system innovation in order to be both safe and useful.

Most of the foreseeable types of activities or transactions on the NII will require the user to pay the information provider and the network carrier for the services provided. Government services and education related services are the only promised (by Clinton/Gore & telephony/cable companies) free services as of today. It is expected that businesses and non-profit organizations will offer the NII equivalent of 1-800 services. All other activities will require the user to have an open account with the provider or another means of paying for the transaction on-line.

One approach to NII payments is the "network accounting server" model. Under this approach, the user would have a single account with a network carrier which would credit the accounting server of the information or other service provider from whom the user is purchasing information or other services. The user would pay only one firm for all or most of the services used, rather than paying each individual provider either once or several times a period.

A second approach is on-line or off-line debit or credit account transactions with the payment message travelling either along with the purchase instructions or separately through a secure mechanism. An example of an on-line debit system would be an ATM network compatible message containing a payment instruction. One example of an off-line debit transaction could be a message containing a credit card account number with the expiration date and other information required to initiate a credit card payment.

A third approach is digital cash. The following discussion is designed to elicit answers to a number of important questions from the perspectives of law enforcement agencies, central banks, and commercial banks.

Digital Cash

An increasing number of banks and non-banks are in the process of designing or will soon be pilot testing "digital cash" payment mechanisms. "Digital Cash" is electronically stored value that is transferable in real time between individuals, between individuals and firms, or between firms. Digital cash is alternatively named electronic currency, or electronic cash, but distinct from other electronic payment mechanisms (ACH, Electronic Checks, etc.). This stored value can reside in "smart cards," and portable or other computers and/or devices.

Digital cash is intended (according to the technologies pioneers) to be used first in the "virtual world" (i.e. on-line on the information superhighway), in a parallel fashion to the way paper cash (coin and currency) is used in the "real world." Later implementations may establish credit risk free payment mechanisms for corporate or bank value transfers. No one has fully explored the possibilities of this type of payment mechanism from business and public policy perspectives.

The industry and public policy implications of these formerly "science fiction" payment system mechanisms are numerous, and few of these issues have been addressed. The following are a few of the questions which must be answered:

Questions

What should a system look like?

Commercial/Retail

Small dollar/Large dollar

Traceable/Untraceable-Anonymous

Who creates the monetary value (Govt., Banks, Non-Banks)?

What security features will be included?

Digital Signatures

Serial Numbers

Severability-Changemaking capacity

PINS

Lockable

Traceability

What risk management (credit & operational risk) efforts are required?

Regulatory compliance

What regulations will apply? (Wire Transfer, Reg E or new regs.)

Who will regulate the service providers?

What limits will be imposed on maximum value per instrument?

What reporting requirements will be imposed? On whom?

Affected Parties

Law Enforcement Interests

Counterfeiting

Theft

Money laundering

Other law enforcement crime reduction efforts

Bank Security

Bank Secrecy

Central Bank Interests

Money supply

Payment system risk

Commercial Bank Interests

Operational

Business