

Board of Governors of the Federal Reserve System



***Report to the Congress
on the Application of the Electronic Fund Transfer Act
to Electronic Stored-Value Products***

March 1997

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Submitted to the Congress pursuant to section 2601 of the
Economic Growth and Regulatory Paperwork Reduction Act of
1996

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I. Introduction and Summary

Section 2601 of the Economic Growth and Regulatory Paperwork Reduction Act of 1996 directs the Board of Governors of the Federal Reserve System (the Board) to conduct a study that evaluates whether provisions of the Electronic Fund Transfer Act could be applied to electronic stored-value products without adversely affecting the cost, development, and operation of such products.¹ The Board is to consider whether alternatives to regulation under the Electronic Fund Transfer Act, including the option of allowing market forces to shape the development and operation of electronic stored-value products, could more efficiently achieve the objectives embodied in that act.

The Board, for some time, has been closely following a number of evolving issues concerning electronic stored-value products, including issues relating to consumer protection. The Board has a long-standing interest in these issues as a result of its responsibilities for both consumer protection in financial transactions and fostering the integrity and efficiency of the payment system. The Congress' directive raises important issues in both of these arenas. This study analyzes and evaluates some regulatory and nonregulatory options for addressing certain risks faced by consumers in connection with the use of electronic stored-value products. The study examines the costs and benefits of various regulatory alternatives, but it does not endorse or recommend any specific course of action.

The term "electronic stored-value products" encompasses a wide variety of existing and planned products designed to provide an alternative to traditional means of paying for goods and services. The features of such products vary considerably, and a precise definition is therefore not possible. For purposes of this report, electronic stored-value products can generally be thought of as sharing some or all of the following three characteristics: (i) A card or other device electronically stores or provides access to a specified amount of funds selected by the holder of the device and available for making payments to others; (ii) the device is the only means of routine access to the funds; (iii) the issuer does not record the funds associated with the device as an account in the name of (or credited to) the holder.

The U.S. payment system is well developed and comprises a number of competing products, including cash, checks, money orders, credit cards, "debit cards," and travelers checks.² Electronic stored-value products are a recent innovation in payment systems technology that has the potential to increase the efficiency of the retail payment system. Nonetheless, although these products may provide benefits to both consumers and merchants, their introduction seems unlikely to change the fundamental nature of our current payment

¹ Pub. L. No. 104-208, 110 Stat. 3009.

² For purposes of this report, the term "debit card" refers to a card that accesses a consumer account that is subject to the Electronic Fund Transfer Act.

system in the near future. Electronic stored-value products, if successful, will add one more option to the set of payment technologies available to participants in retail transactions; they will compete with existing alternatives that are firmly entrenched among both consumers and merchants. If experience with the introduction of debit cards can serve as a guide, widespread public acceptance of stored-value products, if it occurs at all, will likely develop slowly over many years.

In using retail payment instruments, consumers are exposed to many types of risk, including loss, unauthorized use of the instrument, and errors in processing transactions. In general, electronic stored-value products give rise to the same types of risk that other payment instruments do, although the degree of any particular risk may vary because of differences in operating characteristics among the payment instruments. Both consumers and issuers of payment instruments have incentives to mitigate the risks associated with using these products. In addition, some consumer risks are addressed by laws, including the Electronic Fund Transfer Act.

The primary goal of the Electronic Fund Transfer Act is to protect consumers. The act eliminates uncertainties for both consumers and financial institutions regarding liabilities related to electronic payments. The act, as implemented by Regulation E, provides protection against unauthorized or erroneous electronic transactions that access consumer asset accounts, by imposing documentation and recordkeeping requirements to assist consumers in detecting and remedying these problems. The act also requires that providers of electronic fund transfer (EFT) services disclose certain information regarding the terms of these services and inform customers of any changes in terms.

The Electronic Fund Transfer Act authorizes the Board to implement rules that extend Regulation E's coverage to new EFT services and to provide for adjustments and exceptions that are necessary or proper to effectuate the act's purposes and to facilitate compliance. In determining the extent to which new products such as electronic stored-value products should be subject to the requirements of the act, the Board is required to allow for the continuing evolution of electronic banking services and the technology used in such services. The Board must also balance consumer protection with the compliance costs necessary to provide this protection and, to the extent practicable, demonstrate that the consumer protection provided by the regulation outweighs the compliance costs imposed upon consumers and financial institutions.

Government regulation may be warranted when the unfettered operations of the private sector fail to achieve an economically efficient outcome, i.e., in the presence of "market failure." Government responses to market failures, although having the potential to improve market outcomes, may have unforeseen, and sometimes adverse, consequences. Economic theory and empirical evidence suggest that government regulation has the potential to foster or hinder

technological progress and the development of new products by influencing private sector incentives to invest in research and development activities and private sector choices among alternative technologies. In deciding whether and, if so, how to regulate electronic stored-value products, policymakers must carefully assess the potential effect of their decisions on the evolution of these new products and the extent to which they achieve market acceptance. Choices made today may significantly influence the payment options available to market participants in the future.

Consumers using electronic stored-value products would generally be expected to receive protection against some risks, even in the absence of explicit government regulation. The existing legal framework provides incentives for providers of stored-value products to disclose terms and to avoid unconscionable or unfair terms. Moreover, to induce consumers to substitute stored-value products for more familiar payment alternatives, providers need to make stored-value products attractive to both consumers and merchants and to make potential customers aware of the characteristics of their products.

Government agencies can take steps short of regulation by issuing policy statements or by undertaking consumer education programs. Policy statements provide guidance to industry about the agencies' expectations for industry practices. Their success depends, in part, on the industry's willingness to follow government guidelines, because generally there is no enforcement mechanism. Consumer education programs are an alternative mechanism for addressing consumer protection concerns. Targeted education programs can sometimes provide consumers with useful information that supplements the information provided by the private sector. However, in the case of diverse and rapidly changing products, it may be difficult to provide useful and relevant information in a timely manner. In deciding whether to undertake such programs, the government should consider whether the incremental increase in information is sufficient to justify the costs of developing and implementing the programs.

The great variety in existing and planned electronic stored-value products makes it unlikely that a single set of consumer protections would be appropriate for all electronic stored-value products. In April 1996, before the passage of the Economic Growth and Regulatory Paperwork Reduction Act, the Board issued proposed amendments to Regulation E that would apply selected provisions of the regulation to certain types of stored-value products.³ Full application of Regulation E to all electronic stored-value products, which would probably be quite costly, was not proposed.

This study considers several approaches for selective application of Regulation E protections to electronic stored-value products. These approaches include (i) requiring only initial disclosure of information concerning product characteristics, (ii) uniformly applying a

³. 61 FR 19696, May 2, 1996.

subset of critical Regulation E provisions to all stored–value products, (iii) variably applying selected Regulation E provisions on the basis of product usage or characteristics, and (iv) variably applying selected Regulation E provisions on the basis of the underlying technology’s ability to comply with regulatory requirements. Any of these approaches to selective application of Regulation E requirements would, depending on the details, probably impose significant operating costs for some electronic stored–value products and could generally give rise to opportunity costs as well.⁴ The approach to applying Regulation E to electronic stored–value products that would impose the smallest opportunity costs and be least likely to inhibit development of the new technology is the one that requires only initial disclosures. However, even this approach has the potential to distort market outcomes by differentially affecting the costs of alternative products. Given the limited experience with stored–value products to date, it is difficult to assess the extent to which the benefits to consumers from any particular Regulation E provision would outweigh the corresponding costs of compliance. Moreover, Regulation E does not cover some important risks faced by consumers using stored–value products, such as loss (where no unauthorized use occurs) or expiration of the instrument or insolvency of the issuer.

Early regulation of electronic stored–value products could cause higher regulatory costs than later regulation (if regulation ultimately is determined to be desirable) because of economies of scale, the cost of revising regulations, and possible opportunity costs. However, early regulation also has the potential to speed up development by promoting standardization and by removing uncertainty about the applicability of regulation to new products and technologies.

Even if regulation of electronic stored–value products is determined to be desirable, there may be legal constraints to regulating all stored–value products under the Electronic Fund Transfer Act. The act’s language and its legislative history clearly permit the application of Regulation E to some electronic stored–value products (i.e., those that involve EFTs from consumer asset accounts) but may not cover others. To the extent that this legal distinction leads to differential regulatory treatment of similar products, it could significantly influence the evolution of electronic stored–value products as a payment option.

This study is organized as follows: Section II discusses economic rationales for government regulation and presents an analytical framework for examining the effects of regulation on incentives to innovate and on the development and adoption of new products and technologies. Section III describes the spectrum of electronic stored–value products currently available or in the planning stages and identifies some basic characteristics that these products share. This section also explores the potential role of electronic stored–value products in the

⁴ Opportunity costs are the forgone benefits attributable to choosing one course of action over another. Regulation generates opportunity costs when it causes a producer to forgo profitable activities.

retail payment system. Section IV discusses the specific risks to consumers associated with retail payment mechanisms and the way those risks have been addressed by market practices as well as by laws. This section also examines the Electronic Fund Transfer Act and the subset of payment-related risks that the act addresses. Section V analyzes the potential costs of applying Regulation E requirements to electronic stored-value products. The analysis is based on qualitative and quantitative evidence regarding experience with Regulation E, including data on compliance costs obtained from a 1981 survey of banks. The discussion also draws on comments relating to costs submitted to the Board in response to its recent proposal to subject some electronic stored-value products to Regulation E requirements and on the results of several statistical studies of regulatory costs. The last section provides an economic analysis of the costs and benefits of several policy options, including the option of relying on market forces to ensure that users of electronic stored-value products receive adequate protection, and discusses legal considerations that may arise in connection with these alternatives.

II. Analytical Framework: The Economics of Innovation, Technology, and Regulation

This section presents an analytical framework for examining the effects of government regulation on incentives to innovate and on the development and adoption of new products and technologies. It begins with a discussion of the relationship between technological progress and social welfare and then presents a brief examination of the impact of recent technological advances on the financial services sector. The balance of the section considers the rationales for and the effects of government regulation, with a particular emphasis on the regulation of emerging technologies.

A. The Effects of Technological Progress on Social Welfare

The welfare of a society is greatly influenced by the ability of its economic system to foster growth in the production of goods and services. There are three fundamental sources of economic growth: increases in human resources, increases in capital resources, and technical progress. Technical progress is the mechanism by which society is able to produce greater and higher quality output from an endowment of natural, human, and capital resources. Technological advancement occurs, for the most part, in small incremental steps as firms strive to compete more effectively with existing or potential rivals. Occasionally, technology takes great leaps forward, fundamentally changing the way households and firms conduct their daily business. Economic research has found that technical progress is an extremely important factor in influencing the rate of economic growth.⁵

New products or technologies are often developed without a clear understanding of how they ultimately will be utilized. Although investment in research and development is frequently undertaken with a specific goal in mind, history offers numerous examples of inventions that, when developed, were expected to have limited applications but subsequently were found to have unforeseen and economically important uses that substantially enhanced social welfare.⁶

Given the close link between technical progress and improvements in social welfare, policymakers have an obligation to consider the effects of their actions on incentives to invest in

⁵ See, for example, Robert M. Solow, "Technical Change and the Aggregate Production Function," *Review of Economics and Statistics* 39 (August 1957), pp. 312–20, and Edward Denison, *Accounting for United States Economic Growth, 1929–1969* (Washington, D.C.: Brookings Institution, 1974). The role of technology as a determinant of the rate of economic growth has been a subject of debate in the economics profession in recent years. While some economists contend that technology's role is fairly minor, others continue to believe that technology, broadly defined, is an extremely important source of growth. See Jeffrey C. Fuhrer and Jane Sneddon Little, "Technology and Growth: An Overview," *New England Economic Review* (November/December 1996), pp. 3–25.

⁶ For example, Marconi, who invented the radio, anticipated that it would be used primarily for point-to-point communication in situations where communication by wire was impossible (e.g., ship to ship). He did not foresee its great value as a broadcast medium. Nathan Rosenberg cites this and many other historically important examples in "Uncertainty and Technological Change," unpublished manuscript presented at the Federal Reserve Bank of Boston Conference on Technology and Growth, June 5–7, 1996, Chatham, Mass.

research and development (R&D) activities that can lead to product and process innovations. Research and development are risky activities with highly uncertain outcomes. Investors require high expected rates of return in exchange for bearing the risk associated with funding such ventures. Government policies, which may alter the riskiness of or the returns to R&D investments, have the potential to foster or to hinder technological progress and product development and may influence firms' choices among alternative technologies.

B. Technical Innovation in the Financial Services Sector

Technical innovation has played a central role in the evolution of the financial services industry over the past fifty years. Advances in information processing and communications technologies, in particular, have fundamentally changed the nature of financial services by influencing the manner in which these services are created, delivered, priced, received, and used.⁷

Developments in computer technology have made possible the introduction of many new financial products, such as zero coupon bonds, mortgage-backed securities, interest rate swaps, and tools to better evaluate and manage credit and interest rate risks.⁸ For example, the development of credit-scoring models, made possible by advances in computer technology, has increased the speed and consistency of underwriting decisions, while reducing costs and substantially improving the accuracy of credit risk assessments.⁹

Technological change has also altered the manner in which consumers interact with providers of financial services, reducing the importance of physical location and face-to-face interactions. Many financial services are now available through ATM networks, over telephone lines, or via the internet. Electronic banking, in its various forms, provides a convenient, low-cost alternative to the traditional bank visit. Consumers can have paychecks, dividends, pensions, and other payments from businesses and government deposited directly into their accounts. They can make payments from their accounts by using a debit card or an automatic payment or telephone transfer feature. Consumers can also use automated teller machines to obtain cash and conduct other financial transactions at times when their financial institution is closed and at locations other than bank branches. A recent survey estimates that about

7. Furthermore, innovations have allowed banks effectively to circumvent a variety of regulatory restrictions, such as limits on branch locations and restrictions on the payment of interest on certain types of accounts. The effectiveness of state rules restricting the location of bank branches was substantially eroded as a result of innovations in the structure of banking organizations (e.g., the creation of bank holding companies) and the development of new technologies for delivering financial services (e.g., automated teller machine (ATM) networks).

8. For further details, see Laurie S. Goodman, "The Interface between Technology and Regulation in Banking," in Anthony Saunders and Lawrence J. White, editors, *Technology and the Regulation of Financial Markets* (Lexington, Mass.: D.C. Heath and Company, 1986), pp. 181–86.

9. See Robert B. Avery, Raphael W. Bostic, Paul S. Calem, and Glenn B. Canner, "Credit Risk, Credit Scoring, and the Performance of Home Mortgages," *Federal Reserve Bulletin* 82 (July 1996), pp. 621–48.

two-thirds of those households that use a financial institution rely on some form of electronic technology to conduct a portion of their banking business.¹⁰

Technological advances have made it possible to conduct financial transactions in a faster, safer, and more efficient manner, both by speeding up traditional payment methods and by facilitating the introduction of new methods. On-line credit card authorization systems have significantly reduced both the amount of time needed to carry out a credit card transaction and the risks associated with such a transaction. This innovation has benefited consumers by increasing the availability, reducing the cost, and increasing the acceptability of credit cards. As mentioned, debit cards provide an alternative payment option, which some consumers prefer to writing a check or paying by cash in certain circumstances.¹¹ Electronic stored-value products, which are in an early stage of development, have the potential to increase the efficiency and security of the retail payment system.¹²

C. Government Policy and Innovation

In a market economy, the society relies primarily on the forces of competition to induce market participants to behave in an economically efficient manner. This implies that firms efficiently produce the goods and services that consumers desire and that prices reflect the costs of the resources employed in the production process. Yet, even when most of the important resource allocation decisions in an economy are made by the private sector, government intervention may be appropriate in some areas.

1. Rationales for Government Regulation. Government intervention may be warranted when the unfettered operations of the private sector fail to achieve an economically efficient outcome, that is, in the presence of “market failure.”¹³ Government intervention may prohibit specific behaviors, require certain product characteristics, set or limit prices, or mandate disclosure of information. Government responses to market failures, while having the potential to improve market outcomes, may also have unforeseen and sometimes adverse consequences. Regulatory intervention does not always achieve the desired outcome. Moreover, even when

¹⁰. In this survey, electronic technology is defined broadly to include telephone, wire transfer, ATM, payroll deduction/direct deposit, and computer banking. If electronic technology is defined more narrowly to include only wire transfers and computer banking, the proportion of households relying on such technology drops to approximately one-fifth. See Arthur B. Kennickell and Myron L. Kwast, “Who Uses Electronic Banking? Preliminary Results from the 1995 Survey of Consumer Finances,” unpublished manuscript, presented at the Annual Meetings of the Financial Management Association, New Orleans, La., October 1996.

¹¹. During the 12-month period ending in September 1996, Visa and Mastercard debit card purchases totaled approximately \$11.9 billion. This number is small in comparison with credit card purchases, but it represents an 80 percent increase over the preceding 12-month period. See *The Nilson Report* 634 (December 1996), p. 3.

¹². Nonelectronic or paper-based forms of stored value, such as travelers checks and gift certificates, have been in use for a great many years.

¹³. Sometimes government may choose to intervene in the market to achieve an outcome that society believes is fair, even if it is economically inefficient. In such circumstances, policymakers must weigh the benefits associated with the improvement in equity against the costs resulting from the loss of efficiency.

market failure justifies a regulatory response, the costs as well as the benefits of the regulation must be considered.

Economists have identified four major sources of market failure: (i) imperfect market structure, (ii) the presence of public goods, (iii) the existence of external costs and benefits, and (iv) imperfect information.¹⁴

Imperfect market structure refers to a situation in which the number of sellers (or buyers) in a market is small enough that a single market participant can significantly influence the price at which a product is sold. In such a market, the forces of competition may be insufficient to drive prices and output to social welfare maximizing levels.

Public goods are goods or services that bestow collective benefits on society—they are, in a sense, consumed jointly by all members of society. Classic examples are national defense and public health. A key characteristic of a public good is that, once it is produced, everyone is able to consume it regardless of whether or not he or she pays for it. As a result, public goods may be either underproduced or not produced at all in a completely unregulated market economy.

External costs and benefits (externalities) arise when the production or consumption of a product generates costs or benefits that accrue to parties not directly involved in the production or consumption process. Pollution and highway congestion are classic examples of negative externalities; maintaining one's home and yard is an example of an activity that generates a positive externality. In the absence of government intervention, private parties typically do not have the incentive to produce or consume socially optimal quantities of externality-generating products.

The conclusion that competitive markets lead to socially desirable outcomes depends on, among other things, the assumption that all market participants have complete information about product characteristics and prices. In the absence of full information, market participants may undertake transactions that have unanticipated outcomes. In some cases, the government may find it appropriate to attempt to mitigate the problems associated with imperfect information by either providing information to market participants or requiring firms to provide such information.

Market failure often provides the motivation for government intervention, but government action cannot necessarily solve the problems associated with market failure. When the market structure is imperfect, imposing a competitive market structure is not always possible or desirable. Regulation, which is often relied upon to improve the allocation of resources in imperfectly competitive markets (e.g., natural monopolies), provides an imperfect substitute for

¹⁴ See, for example, Karl E. Case and Ray C. Fair, *Principles of Economics* (Englewood Cliffs, New Jersey: Prentice Hall, Inc., 1989), p. 295.

competition. Although government intervention is often necessary to ensure the provision of public goods, it is difficult or impossible for the government to accurately determine the appropriate production level for such goods. A similar problem arises when production or consumption activities generate externalities. Finally, in markets where information problems arise, ensuring that all market participants are fully informed is not always possible, even with government intervention. For example, when products are particularly complex, it may be difficult to identify the most important information and to provide it in a format that consumers can readily utilize. Policymakers must also take care that any information they require firms to provide is not potentially misleading. Moreover, in requiring firms to provide information to consumers, policymakers must weigh the costs and benefits of such requirements.

2. Regulation of Financial Services. The financial services sector has long been subject to government regulation. Regulation of financial institutions has been directed toward the achievement of three broad objectives: minimizing the risks to the public associated with instability of financial markets and the failure of financial institutions, limiting the ability of financial institutions to exercise undue market power, and protecting consumers against unfair practices.¹⁵

Government has pursued these objectives by engaging in several types of regulatory activities. Activities aimed at ensuring the stability of financial markets include policies to (i) control entry through chartering, branching restrictions, and various licensing requirements, (ii) authorize, limit, or prohibit specific financial practices and services, and (iii) require deposit insurance, ensure capital adequacy, and conduct safety and soundness examinations. Regulators seek to prevent the accrual of undue market power by reviewing proposed mergers and acquisitions among financial institutions and prohibiting those that are expected to generate significant anticompetitive effects. Policies designed to protect consumers against unfair practices include disclosure requirements, prohibitions against discrimination in lending, and the proscription of certain abusive practices.

3. Effects of Government Regulation. Market failure can create a legitimate need for government regulation, but policymakers must recognize that such action may influence the behavior of individuals or firms in unintended and often unpredictable ways. For example, regulatory compliance inevitably generates costs, which may be partially or fully passed on to consumers. In the long run, in a perfectly competitive market, prices would adjust so that consumers would bear all regulatory compliance costs. Alternatively, in a less than perfectly competitive market, the costs of regulation may be shared by producers and consumers in the

¹⁵ See Charles F. Haywood, "Regulation, Structure, and Technological Change in the Consumer Financial Services Industry," in *The Costs and Benefits of Public Regulation of Consumer Financial Services*, Report No. 79-34 (Cambridge, Mass.: Abt Associates, Inc., 1979), pp. 69-124.

long run, with the relative burdens depending on the elasticities of supply and demand. Additionally, government policies designed to address problems caused by market failure can affect the risks and returns associated with investment in developing new products and technologies.¹⁶ These effects can be particularly important when the product or technology being regulated is at an early stage of its development.

a. Regulation of emerging technologies. Regulation at an early stage of product development may affect the direction or speed of product or technology development. A desire to minimize regulatory compliance costs may influence firms' choices among alternative research and development paths and ultimately have an important impact on the specific features of resulting products. For example, firms may design new products so as to take advantage of regulatory "loopholes," thereby avoiding actual or anticipated regulatory costs. Alternatively, firms may decide not to offer products having certain characteristics because of burdensome regulatory requirements.

Imposing regulations on a product or technology that is still emerging can either speed up or slow down the development process. For example, government regulation has the potential to promote standardization. In some situations, the establishment of "industry standards" (whether government imposed or privately determined) can greatly facilitate both the development process and market acceptance of a new product. A case in point is the industry agreement on the technology to be employed in magnetic ink character recognition, which was essential to the introduction and rapid adoption of computerized check processing in the late 1950s and early 1960s. More recently, in late December 1996, the Federal Communications Commission formally adopted technical standards for digital television that are expected to facilitate the development of more versatile, higher-quality television programming and receivers.¹⁷

Early agreement on an industry standard can bring a new product to market more quickly, but the standard adopted may prove to be a poor choice that hinders the subsequent introduction of superior products. If private markets settle upon "the wrong standard," market forces have the ability to remedy the mistake. The situation is quite different when the government imposes the wrong standard by passing a law or regulation, which can be very difficult to change. Thus, even when government regulation facilitates more rapid product or process innovation, the direction of the impact on social welfare is difficult to predict.

¹⁶ For example, frequent changes in the federal government's approach to regulation of the cable television industry over the past fifteen years have significantly influenced the risks and returns to investors and their incentives to invest in new products or technologies. See Robin A. Prager, "The Effects of Deregulating Cable Television: Evidence from the Financial Markets," *Journal of Regulatory Economics*, 1992, pp. 347-63; Kathleen A. Carroll and Douglas J. Lamdin, "Measuring Market Response to Regulation of the Cable TV Industry," *Journal of Regulatory Economics* (1993), pp. 385-99; and William M. Emmons III, Adam B. Jaffe, and Jonathan B. Taylor, *The Investment Consequences of the Re-Regulation of Cable Television*, The Economics Resource Group, Inc., 1994.

¹⁷ Paul Farhi, "FCC Adopts Digital TV Standards," *The Washington Post*, December 27, 1996, p. G1.

Another way in which early promulgation of regulatory rules can affect the speed of innovation is by removing uncertainty about both the applicability of regulation to the new product or technology and the details of any regulation that is to be applied. However, establishing the regulatory rules that will apply to a product or technology at an early stage in its development may either encourage or discourage R&D activity, depending on the nature of the rules.

The early adoption of a single set of rules, through the establishment of federal standards, can avert the cost and confusion associated with efforts to comply with multiple, possibly conflicting, state regulations that might emerge in the absence of federal intervention. However, government regulation at an early stage of product development can discourage investment in new products or technologies by constraining innovators' choices among product or process characteristics. For example, government rules that limit firms to a particular technology might result in slower product development than would result from competition among firms employing different technologies.

Government intervention can not only influence the direction and speed of technological development, it can also prevent some new products or technologies from being developed. Regulatory requirements may be so stringent that for some products compliance would be impossible at any cost. For other products, although compliance may be technically feasible, the cost may be sufficiently high to deter firms from bringing them to market.

As discussed more fully in section V, policymakers should recognize the possibility that significant economies of scale may occur in regulatory compliance for new products.¹⁸ That is, the per-unit costs of meeting regulatory requirements may be large for firms producing and selling small quantities of output, even if these costs are relatively small (on a per-unit basis) when production quantities are greater. Given that demand for new products is often slow to develop and the speed of market acceptance is uncertain, initial regulatory costs can be high enough to create barriers to the introduction of new products, even when these costs are expected to be modest when spread across a large number of units.

Although there may be potential benefits associated with early regulation of an emerging technology, there are also substantial risks. Given the uncertainties inherent in the development of a new product or technology, assessing the relative magnitudes of the costs and benefits of early regulation in any particular case is often difficult. Regulatory mistakes arising because regulators cannot foresee developments may be costly to correct. On balance, it seems prudent

¹⁸ See Gregory E. Elliehausen and Robert D. Kurtz, "Scale Economies in Compliance Costs for Federal Consumer Credit Regulations," *Journal of Financial Services Research* 1 (January 1988), pp. 147–59, and Frederick J. Schroeder, *Compliance Costs and Consumer Benefits of the Electronic Fund Transfer Act: Recent Survey Evidence*, Staff Study 143 (Washington, D.C.: Board of Governors of the Federal Reserve System, 1985).

for government to proceed cautiously and to engage in early regulation only when the benefit–cost tradeoff is particularly compelling.

b. Special considerations in the presence of network externalities. Early decisions about technology and product characteristics, which (as discussed above) can be affected by government regulatory policy, are particularly important in the presence of network externalities. Network externalities exist when the value of a product to a user increases with the number of other users.¹⁹ For example, the value of a fax machine to a particular user depends greatly on the number of other fax machines with which it can communicate. Likewise, within the financial sector, the value of a credit or debit card to a cardholder increases with the number of merchants accepting such cards, which in turn varies positively with the total number of cardholders. When network externalities are present, a product or technology can become entrenched once it achieves a critical mass among users. In other words, once many users have adopted a particular technology or product, persuading them to switch to a competing alternative can become very difficult, even if the alternative is generally perceived to be superior to the existing technology or product.²⁰ For this reason, early government intervention in markets for products such as electronic stored–value cards, which exhibit network externalities, can have particularly profound and long–lasting effects.²¹

c. Asymmetric regulatory treatment of competing products. Drawing clear distinctions between regulated and unregulated activities can be difficult, particularly when regulators limit the applicability of a regulation to specific segments of a product market. Moreover, although a regulation’s applicability may be clear when the regulation is first written, over time, market participants may seek to avoid burdensome regulation by introducing new products that are functionally equivalent to the regulated products but that escape coverage.

The development of new products that succeed in avoiding regulatory restrictions can have several possible consequences. First, regulators may ignore the new product, allowing the regulated product to diminish in significance or disappear entirely over time. Second, regulators may seek to extend the regulation to cover the new product. Such an effort can stifle innovation or cause firms to continue to seek unregulated alternatives to the regulated products. Finally, regulators may choose to remove or relax the regulation on all functionally equivalent products, to the point that the constraint is no longer binding or compliance costs are minimal.

¹⁹ For a more detailed discussion of network externalities see Michael Katz and Carl Shapiro, “Network Externalities, Competition and Compatibility,” *American Economic Review* 75 (June 1985), pp. 424–40, and Nicholas Economides, “The Economics of Networks,” *International Journal of Industrial Organization* 14 (1996), pp. 673–99.

²⁰ The problem of entrenchment associated with network externalities is greatly ameliorated if competing products or technologies are fully compatible with each other.

²¹ See Paul M. Horvitz and Lawrence J. White, “The Challenges of the New Electronic Technologies in Banking: Private Strategies and Public Policies,” New York University, Salomon Center, Working Paper S–96–44.

Experience with the regulation of interest rates on various types of deposit accounts illustrates how the market may react to changing economic conditions by developing new products, which may in turn prompt regulatory or legislative responses.²² For decades, banking regulations limited the interest rates that could be paid on demand deposits and time deposits. Economic conditions in the late 1960s and at times during the 1970s caused the ceilings on deposit interest rates to become binding. In response, financial markets developed alternatives to regulated products—for example, large negotiable certificates of deposit and Eurodollar deposits. Furthermore, during this period, retail deposits began flowing into unregulated Treasury securities; subsequently, minimum account size requirements for these securities were raised to levels beyond the reach of most consumers. Finally, money market mutual funds emerged during this period. These funds, whose yields were not subject to regulatory constraints, became extremely popular as consumers moved balances to them from banks at times when interest rate ceilings were binding. Ultimately, the Congress decided that, instead of trying to regulate these various market alternatives, the public was better served by removing interest rate ceilings on deposit accounts.²³

The U.S. payment system is characterized by a number of competing products that enable consumers and merchants to select the payment option that is best suited to meet their needs in carrying out any particular retail transaction. These products include currency, checks, money orders, credit and debit cards, various forms of electronic transfers, and, in very limited circumstances, stored-value cards. Most of these products are subject to some form of regulatory restriction, which affects their costs and availability. Regulation of any of these alternative products may affect all of them, by influencing the choices consumers and merchants make among the competing options.

Asymmetric regulatory treatment of competing alternatives may confer competitive advantages (or disadvantages) on certain products. To the extent that regulation imposes net costs on the providers of one payment technology but not on the providers of a close substitute, it is likely to tilt the market away from the former and toward the latter. Moreover, for any given type of payment product, the application of differential rules to specific products within the category can distort market outcomes. The effects of asymmetric regulatory treatment can be particularly pronounced in the case of an emerging technology, where the course of product development and specific product features are still largely undetermined.

²² See Patrick I. Mahoney, Alice P. White, Paul F. O'Brien and Mary M. McLaughlin, *Responses to Deregulation: Retail Deposit Pricing from 1983 through 1985*, Staff Study 151 (Washington, D.C.: Board of Governors of the Federal Reserve System, January 1987).

²³ Depository Institutions Deregulation and Monetary Control Act of 1980.

d. Regulation and market acceptance of new products and technologies. The willingness of consumers to accept a new product or technology depends on the perceived benefits that the new product or technology offers and the costs associated with it. Market participants evaluate these benefits and costs in relation to those of competing alternatives. Regulation can affect the acceptance of a new technology or product by influencing the benefits or costs associated with its use or by requiring the provision of information that enhances the ability of market participants to understand these benefits and costs. For example, consumer protection regulations may influence product characteristics in ways that make the product more or less attractive to consumers. On the one hand, the presence of consumer protection regulations may promote consumer acceptance of a new technology or product by reducing the consumer's risk exposure and thereby increasing consumer confidence. On the other hand, excessive consumer protection regulations may deter product acceptance by unduly focusing consumers' attention on product risks or complexities or by requiring product characteristics that consumers do not value. Even when a regulation is largely irrelevant, because it requires product characteristics or information that firms would provide voluntarily, it can raise producers' costs and hence the prices faced by consumers.

Regulation can also affect merchant acceptance of new products or technologies. In the case of electronic stored-value products, experience to date suggests that widespread merchant acceptance may be more difficult to achieve than consumer acceptance.²⁴ If regulation imposes costly requirements on merchants offering this payment option, it may create a significant obstacle to the technology's ultimate success.

To the extent that the provision of information about a new product or technology facilitates market acceptance, private sector firms have an incentive to provide that information. Standardizing both the format and the content of the information provided can substantially reduce the difficulty of comparing competing products. Government regulation is one mechanism for achieving such standardization; however, other alternatives exist. The private sector can often agree upon standards that promote acceptance of a new product or technology; in some instances, government regulators can facilitate such private agreements by encouraging the standard-setting process.

D. Summary

Technical progress is an important source of improvement in social welfare. Government policies can foster or hinder technological progress and the development of new products by influencing both private sector incentives to invest in research and development activities and

²⁴ See "Message from Atlanta: Consumers Like Stored-Value, Merchants Unconvinced," *Card Technology* (November/December 1996), p. 8, and "Visa Readies for Its Next Stored-Value Card Push," *Debit Card News* (August 16, 1996), p. 1.

choices among alternative technologies. Technical progress and innovation have led to the introduction of many new and highly valued financial services and products over the past fifty years. Electronic stored-value products are a recent financial innovation whose potential to deliver benefits to consumers and merchants is yet to be determined. Government regulatory policies may play an important role in determining how these products evolve and the extent to which they achieve market acceptance. In deciding whether and, if so, how to regulate electronic stored-value products, policymakers must carefully assess the potential effect of their decisions on the evolution of the payment system. Choices made today may significantly influence the payment options available to market participants in the future.

III. Electronic Stored–Value Products and Their Potential Markets

Technological innovation in retail electronic payments could bring important benefits to consumers and other payment system participants through reduced costs, improved efficiency, and expanded payment options.²⁵ In fact, the retail payment system in the United States remains heavily dependent on currency and paper checks despite predictions in the 1970s that, because of declining costs of data processing and transmission, electronic payments would replace more traditional payment methods.²⁶ More recently, new applications of technology in retail banking and payment services have received widespread publicity. Electronic stored–value products are one such innovation.

To assess the potential costs of regulations or other policies toward electronic stored–value products, one must have a basic understanding of the products and their likely uses. This section provides background information on electronic stored–value products; a description of common product features, variations, and operation; and a summary of uses and markets for products that exist currently or that are proposed in marketing information and press accounts.

A. Scope and Definition

There is no generally accepted definition of an electronic stored–value product. The term “stored–value” is often used to refer to payment methods in which a prepaid balance of funds, or “value,” is recorded on a device held by the consumer; this balance is decreased, or debited, when the device is presented for payment. In practice, however, the term has been used to describe a wide spectrum of products that are aimed at a variety of potential markets and uses. The pace of ongoing industry developments suggests that the spectrum of stored–value products is still changing, with new products and features being developed as market experience is gained.

The diversity of payment products under development or implementation makes it difficult at this time to render a precise definition of electronic stored–value products or even to identify general categories of products according to technological, market, or legal distinctions. For example, some of those products referred to as stored–value products may resemble existing payment methods in their technology and operation but differ in the nature of the issuer’s relationship with the customer or the scope of the product’s intended use.

²⁵ For example, the processing costs of paper–based payment methods relative to electronic payments are well known. See, for example, Kirstin Wells, “Are Checks Overused?” *Quarterly Review*, Federal Reserve Bank of Minneapolis (Fall 1996), pp. 2–12.

²⁶ It is estimated that fewer than 100 million of the approximately 2.2 billion transactions initiated by consumers each month are conducted electronically. See Patricia A. Murphy, “Paper Checks Persist as Electronic Payments Gain,” *American Banker* (January 6, 1997), pp. 12A–15A. According to another source, in 1995, personal checks and currency still accounted for nearly 74 percent of the total dollar volume of consumer payment transactions. See *The Nilson Report* 632 (November 1996), p. 6.

In this study, stored–value products are considered a set of retail payment products intended primarily for consumer payments that generally have some or all of the following characteristics:

- A card or other device electronically stores or provides access to a specified amount of funds selected by the holder of the device and available for making payments to others.
- The device is the only means of routine access to the funds.
- The issuer does not record the funds associated with the device as an account in the name of (or credited to) the holder.

Other features may be relevant to some, but not to all, types of stored–value products. These could include short–term or temporary (i.e., disposable) use of the product, use for payments only at designated locations or for particular services, or the lack of any formal relationship between the issuing institution and an identified consumer.

There may, however, be other financial services innovations that may not fit squarely within this description. For example, some card products provide electronic access to payroll payments for employees who have no bank accounts. Others provide access to a store of funds set aside for some short–term or specialized purpose, such as employee bonus programs, student expenses, or certain types of government benefits. Such products are generally not covered in this report.

B. Product Features

Electronic stored–value products in use or proposed for use in the United States currently exhibit considerable variation in their features and operation, financial and legal structures, and intended usage and markets. In many cases, proposed features are uncertain and continue to evolve as issuers gain market experience.²⁷

Key technical features of electronic stored–value products include the type of consumer device and its capabilities and the structure and operation of the overall system for processing payments. Payments are typically executed through the manipulation of electronic data stored

27. Surveys of stored–value products and their features become outdated very quickly because of the rapidly changing commercial environment. For general descriptions of some types of products see “Stored Value Cards Worldwide,” *Nilson Report* 635 (January 1997); Committee on Payment and Settlement Systems and the Group of Computer Experts, Bank for International Settlements, *Security of Electronic Money* (August 1996); Congressional Budget Office, *Emerging Electronic Methods for Making Retail Payments* (U.S. GPO, June 1996); Smart Card News, *A Comparative Study of Electronic Purses* (Smart Card News Ltd., 1996); John Wenninger and David Laster, “The Electronic Purse,” *Current Issues in Economics and Finance* (Federal Reserve Bank of New York, April 1995).

on the consumer's device or in a remote central computer system or in some combination of the two.²⁸

Stored-value products in which balances are stored on a card include magnetic stripe cards as well as more sophisticated "electronic purses." The former products, including public transit or photocopier machine cards, have been available for years. A balance of funds is recorded on the magnetic stripe and is debited by a terminal each time the card is used. Systems using such cards are relatively inexpensive to implement but do not provide a high level of security. The newer products, particularly those referred to as electronic purses, use a portable computer device, such as a "smart card," that can perform calculations.

Most smart-card-based stored-value products are still in their testing and pilot phases in the United States. A smart card contains an embedded microcomputer, or microchip.²⁹ The microchip is able to store and manipulate data according to preprogrammed functions on the chip and external instructions from a card-reading unit or terminal. Smart cards or similar portable computer devices that do not require direct contact with a terminal ("contactless" cards) have also been proposed for some stored-value card programs. Although more costly to manufacture than magnetic stripe cards, smart cards are much more difficult to tamper with or counterfeit. Smart cards also provide added security protocols that may often eliminate the need for real-time authorization for transactions at the point of sale by a remote central system, as is often performed for credit or debit cards to help prevent fraud.³⁰ However, stored-value products based on smart cards may involve on-line remote authorization from a central system in some circumstances or for certain types of transactions. Smart cards can store transaction information as well, but most do not include a visual display and must be inserted into a card reader device to display balance or transaction information. Some suppliers have developed small card readers that can be carried by the consumer (e.g., on a key ring or as a "sleeve" in which the card can be carried) to show card balances and, in some cases, display transaction information.

In contrast, a number of stored-value products that do not utilize smart cards require communication with a remote computer system for each transaction. For example, many prepaid telephone cards include a printed access code that is entered by the consumer at a touch-tone

²⁸ One source reports that card manufacturers produced 3.8 billion prepaid cards worldwide in 1996, of which 73 percent had "monetary value stored in the card"; for the remainder, balances were stored in a remote host computer. *Nilson Report* 635, p. 1.

²⁹ Smart cards are becoming more widely used for nonfinancial applications such as access and security (e.g., to buildings or computers) and are anticipated for use in storing personal data, such as medical records. See, for example, Jose Luis Zoreda and Jose Manuel Oton, *Smart Cards* (Boston: Artech House, 1995).

³⁰ Cryptographic protocols are an important feature in preventing fraud and counterfeiting for smart-card-based products. A number of other security measures, such as verifying important data on cards on an ex post basis, have been developed for some products to help detect tampering. In some cases, calculation of "shadow" card balances by a central system is involved.

telephone. This code permits the central system to verify and reduce the balance associated with that card as calls are made. Other stored-value cards have a magnetic stripe containing data that serve to identify each card to a remote central computer system, where a record of funds associated with the card is stored. These cards typically are said to operate in an “on-line” manner—that is, for each purchase transaction at a point of sale, the merchant’s terminal connects to a remote central system where the balance associated with the card is verified and debited as necessary in real time. In some cases, the consumer is required to enter a personal identification number (PIN) or sign a sales slip, as he or she would with a debit or credit card. Other stored-value cards do not require the consumer to enter a PIN to execute a transaction. However, at least one product can be “locked” with a PIN by the consumer to prevent unauthorized uses.

Stored-value cards may include a range of other features. Some issuers plan to include a microchip with traditional magnetic stripe features on a single plastic card to provide access to credit, debit, and stored-value functions and hence combine all of the functions on one device or card. Some cards may be able to hold balances and make payments in multiple currencies.³¹ Other specialized devices, such as telephones equipped with smart card readers, have been designed to work in conjunction with particular stored-value card products.

Currently, most stored-value products can be used to make payments only at designated locations or merchants. However, at least one general-purpose stored-value card product has been designed to allow consumers to make payments directly to other individuals who possess a compatible stored-value device. It is anticipated that, in some cases, such person-to-person payments could be made remotely between individuals using special telephones designed for that purpose.³²

Many stored-value cards, particularly those designed for more specialized use, are purchased with a preset balance of funds; often the consumer can choose from a range of amounts. In these cases, the card is typically disposable and cannot be used once its initial balance has been depleted. Other products are reloadable—that is, the balance can be increased as well as decreased. Some general-purpose stored-value cards may be linked to the consumer’s bank account, such that a reloading transaction initiated by the consumer at an ATM or at a special telephone would transfer the corresponding amount from the account. Other cards are not linked to an account and may be reloaded through a credit card transaction or payment by currency, for example, at a vending machine or at an office of the issuer.

³¹. Typically, the card itself could not perform currency conversions, but a currency stored on a card could be converted to another at an ATM or other terminal that would have access to current exchange rates offered by the issuer.

³². See “Mondex Takes on All Cash,” *ABA Banking Journal* (September 1995), p. 52.

A few stored-value products have been designed for consumers to use from standard desktop personal computers to make payments to merchants or individuals via Internet electronic mail or potentially other remote computer-to-computer communications methods. A small number of these products are in the testing and pilot phases in the United States. To use such products, consumers (and merchants) would install specialized computer software on their personal computers. Stored-value balances would be purchased by the consumer by a debit to an existing deposit account or a charge to a credit card. In some cases, the products are designed to rely on real-time authorization from a remote central computer system via electronic mail to prevent fraudulent transactions.³³ In addition, some stored-value cards designed for face-to-face payments could also be used to make payments over computer networks using a smart card reader attached to a desktop computer.

Stored-value products also differ with respect to their financial structure. Some may be established with a single issuer or other entity who is obligated to settle for payments made with the device and on whose balance sheet a liability is recorded. Single-issuer structures are more common in single-purpose stored-value card systems in which the issuer also provides the product or service that can be purchased using the card, such as public transportation or retail goods at a particular store. In some general-purpose stored-value card systems, a single entity would retain liability for consumers' prepaid funds, but other institutions would distribute cards directly to consumers. In other systems, individual institutions would retain liability to settle for payments using cards issued to their customers.³⁴ Multiple-issuer systems require a centralized clearing system to allow settlement of liabilities that arise between the different issuing institutions (as well as those institutions serving merchants) as transactions are made.

C. Current and Potential Markets

Stored-value products have been publicized as playing roles in the retail payment system that range from niche products for specialized payments to large-scale replacements for cash.³⁵ Stored-value products face strong competition from well-established forms of payment that are acceptable to consumers and for which the necessary infrastructure already exists. However,

³³ For example, some systems would use a remote central system to verify that digital "tokens" had not been previously used. However, in some systems, cryptographic protocols could perform this function without storing transaction records and payor or payee information. For a theoretical example of such a system, see David Chaum, "Achieving Electronic Privacy," *Scientific American* (August 1992), pp. 96-101.

³⁴ In such multiple-issuer systems, each card would carry information sufficient to identify the issuing institution.

³⁵ See, for example, Kelly Holland and Amy Cortese, "The Future of Money," *Business Week* (June 12, 1995), pp. 66-70, and James Gleick, "Dead as a Dollar," *New York Times Magazine* (June 16, 1996), p. 26. Transactions using such general-purpose "electronic purses" are estimated at \$40 million worldwide in 1996. *Nilson Report* 635, p. 6.

they may be able to fill certain niche markets in which existing forms of payment are less efficient or convenient.

Some stored-value cards have been advertised as general replacements for currency and coins, and potentially for other payment methods such as checks and debit and credit cards, in routine small-value face-to-face purchases. One estimate for the amount of these small cash transactions (less than \$20) is more than \$500 billion annually in the United States.³⁶ Locations where cash is commonly the only payment alternative include fast-food restaurants, vending machines, and convenience stores.

In these areas, stored-value cards may provide benefits for consumers relative to cash, depending on their ultimate product design and costs. For example, product developers advertise their cards as being faster than cash for completing transactions and reducing the need for consumers to carry coins or change bills. The cards can also eliminate physical security risks associated with visiting ATMs (if in-home card loading becomes available) and facilitate budgeting and control by segregating an amount of funds for small-value payments, such as for use by children, and preventing overdrafts. However, consumers may value the degree of control that cash affords or may find cash more convenient for determining the amount of funds they have on hand at any given instant and the amount that they have tendered to a merchant in a transaction. Another significant advantage of cash over stored-value cards, at least in the near term, is its universal acceptance.

For larger transactions, consumers may be reluctant to give up the delayed settlement (sometimes called float) derived through the use of checks or credit cards, as well as other features, such as detailed transaction recordkeeping, that may not be available for some stored-value products. Equipment that would make stored-value products more versatile and convenient for the consumer, such as modified telephones to reload cards in a consumer's home or a smart-card reader for a personal computer, would entail significant extra costs for the consumer unless such features became standard.

From the merchant's perspective, stored-value products are often promoted as reducing cash-handling costs, such as those that arise from routine employee theft. As a substitute for checks, stored-value products, like debit cards, could reduce merchants' exposure to the risk associated with the possibility of insufficient funds in a buyer's account. Moreover, stored-value card fees charged to merchants could be less than fees charged to process credit card transactions. However, the cost of installing new merchant terminals that can communicate with smart cards is potentially quite high. Preliminary results from recent pilot projects indicate that general-purpose electronic stored-value products may have difficulty gaining a critical mass

³⁶ MasterCard estimate, cited in "The Smart Cards Are Coming! But Will They Stay?" *ABA Banking Journal* (September 1995), pp. 46-48. Estimates for the size of certain segments of this market can also be found in Congressional Budget Office, *Emerging Electronic Methods for Making Retail Payments*, pp. 18-20.

among merchants and consumers, particularly in terms of installation of this costly merchant infrastructure.³⁷

To date, stored-value cards appear to have had some success in more specialized markets. For example, single-purpose cards are becoming increasingly common for telephone calls and public transportation, as well as for newer applications such as automated highway toll collection and unattended vending machines, photocopiers, and laundry and parking facilities.³⁸ These products may help reduce coin handling costs for merchants and may accelerate revenue for the vendor (i.e., by shifting float from the consumer to the card issuer) or provide extra revenue through unused card balances (sometimes called breakage). In some cases, cards may be provided with incentives for the consumer's use. For example, often prepaid telephone cards advertise lower long-distance rates than those available at public telephones or through credit cards.³⁹

Another increasingly common payment product that may use a stored-value concept is the so-called closed-system card. These cards typically can be used for a variety of purchases by a narrowly defined group of consumers, often in a limited geographic area. Issuers may have the advantage of a captive population that may not be permitted to use other payment options, a merchant base that is largely under the control of one or a few organizations, and a relatively small geographic area over which to install the necessary infrastructure. For the issuer, the cards provide float income and may reduce cash handling costs. Such cards are becoming increasingly common on university and corporate campuses, where the consumer has a longer-term relationship with the issuer and may use the card on an on-going basis. For example, many universities now integrate payment capabilities on student identification cards. In some cases, debit cards are provided by a financial institution in conjunction with the university; in others, the cards involve stored-value features.⁴⁰ Stored-value cards are also being tested in closed environments that consumers visit only temporarily, such as sports arenas or resorts; these cards are often usable only in the particular facility and are disposable once the initial balance has been used.

³⁷. Nikhil Deogun, "The Smart Money Is On 'Smart Cards' but Electronic Cash Seems Dumb to Some," *Wall Street Journal* (August 5, 1996), p. B1, and Valerie Block, "Smart Cards Off to a Bumpy Start, Critics Say," *American Banker* (January 17, 1996), p. 14.

³⁸. For example, one estimate places the use of prepaid cards at \$33 billion worldwide in 1996, with 45 percent of this amount from mass transit, 30 percent from long-distance telephone service, and 22 percent from vending machines. *Nilson Report*, 635, p. 6. See also Valerie Block, "Transit Agencies Pioneer Payment Devices," *American Banker* (September 12, 1995), p. 5A, and "Blockbuster Running Test of a Stored-Value Card," *American Banker* (September 1, 1995), p. 11; and Robert Jennings, "Key Federal Mobil Offer Stored-Value Gas Card," *American Banker* (July 18, 1995), p. 18.

³⁹. See, for example, Steve Alexander, "US West Blazing a Smart Card Trail," *American Banker* (September 12, 1995), p. 10A.

⁴⁰. See Ellen Leander, "Collegians: Captive Audience for Smart Cards?" *American Banker* (September 12, 1995), p. 8A; "Banks Go to School to Learn Prepaid ABCs," *Bank Network News* (January 12, 1995).

Other stored-value cards can be used at a wide range of merchants or at ATMs but are designed for short-term use. For example, some products that are becoming widely available provide a means for consumers to gain access to a specified amount of funds at ATMs or point-of-sale terminals while traveling, a concept similar to that behind travelers checks.

Another potential market for stored-value products is remote shopping, such as by mail-order, by telephone, or over an open computer network such as the Internet. Catalog shopping in the United States in 1995 amounted to \$63 billion; more than half of all U.S. adults are reported to have ordered merchandise by phone or mail in recent years.⁴¹ Currently, the only practical means of completing payment for these transactions is by credit card (communicated via telephone or electronic mail), personal check, or money order. Some of this market may eventually shift to the Internet, which is thought to provide a relatively low-cost and versatile medium for advertising goods and services. Many organizations have been developing different means of payment, including stored-value products, to facilitate shopping on the Internet. The development of methods for initiating credit card purchases over the Internet is now receiving considerable attention from national credit card associations.⁴² Other payment methods are also envisioned or under development for the Internet, such as formats for sending instructions to debit a consumer's deposit account at a bank.

Given these developments, stored-value products proposed for use over the Internet are often characterized as useful for very small payments, generally those under \$10, which are sometimes called "micropayments." Credit cards are generally not thought to be cost-effective for such transactions. Possible uses for micropayments could include payment for immediate delivery of information over the Internet, such as news reports, articles, photographs, or video games. At this stage, it is not clear whether consumer or merchant demand for micropayments will emerge or whether stored-value products will be cost-effective for such purchases. However, at least one stored-value payment product is designed for making anonymous payments over the Internet, a feature not currently available in conventional remote payment methods that could appeal to some consumers for making certain types of payments.

Finally, government agencies may also be involved in the development of potential markets for stored-value products. The federal government is the largest single user of the payment system. The Debt Collection Act of 1996 requires all government payments (with certain exceptions) to be made via electronic means by 1999. As a result, the federal government as well as state governments are examining new means of making payments electronically. For example, pilot projects are under way using various types of payment-card

⁴¹. Direct Marketing Association estimate, cited in Congressional Budget Office, *Emerging Electronic Methods for Making Retail Payments*, p. 31.

⁴². MasterCard and VISA, along with other organizations, are developing a common standard (the Secure Electronic Transaction specification) for transmitting credit card payment information over the Internet.

technology to disburse salaries to military personnel, as well as for purchases at military facilities and prisons.⁴³ Some state governments are testing the use of stored-value cards for the distribution of coupon benefits to recipients who do not have bank accounts and therefore cannot accept conventional electronic funds transfers.

D. Summary

Electronic stored-value products developed or proposed to date exhibit a variety of features. As a result, the range of current and future products is difficult to define or delineate clearly. General categories of stored-value products based on potential usage include those designed as cash substitutes, including single-purpose, closed-system, and general-purpose stored-value cards, and those that operate on personal computers and that could be used for small-value remote payments. Many of the general-purpose stored-value products appear intended to serve as substitutes for currency and coin. Most single-purpose cards also appear to be cash substitutes. However, many closed-system cards appear to be intended to displace other means of payment—cash, checks, credit cards, and debit cards.

Thus, stored-value products, if successful, will create an additional payment option that will compete with alternatives already well-established among both consumers and merchants. Both the costs of installing the necessary infrastructure to implement stored-value systems and the likely market acceptance are highly uncertain at this stage, particularly for general-purpose stored-value products with which experience in the United States is very limited. In the near term, providers of stored-value products are likely to focus on testing various potential markets, gauging consumer acceptance, and realizing the costs of implementing and operating such systems on a large scale. If experience with the introduction of debit cards serves as a guide, widespread public acceptance of stored-value products, if it occurs at all, will likely develop slowly over many years.⁴⁴ Thus, while stored-value products may eventually provide benefits to both consumers and merchants, it seems unlikely that this technological development will fundamentally change the nature of the current payment system in the near term.

⁴³ See U.S. Department of the Treasury, *Government Applications of Computer Card Technology* (May 1996).

⁴⁴ Though debit cards were first introduced in the 1970s, they have only recently gained widespread consumer acceptance. See Valerie Block, “Debit Use Takes Off; ATM Cards Hit a Wall,” *American Banker* (January 2, 1997), p. 13.

IV. Retail Payment Risks and the Electronic Fund Transfer Act

As noted in section II, one economic rationale for government intercession in the market is to address a market failure by adopting laws or regulations designed to correct that failure. Another reason for adopting laws or regulations is to codify market practices in a particular area to provide certainty for market participants. For example, the Uniform Commercial Code (U.C.C.) provisions governing negotiable instruments are largely a codification of market practices that developed over many years before adoption of the U.C.C.⁴⁵

This section discusses the specific risks to consumers associated with retail payments mechanisms in general, and stored-value products in particular, and the ways those risks have been addressed by market practices and by laws (both laws intended to address market failures and laws that codify market practices). This section also examines the Electronic Fund Transfer Act and the subset of payment-related risks and market failures that the Congress chose to address in that act.⁴⁶ The risks associated with stored-value products, like the risks of other retail payment instruments, go beyond those addressed by the act but may be mitigated through the actions of service providers or consumers.

A. Risks in Consumer Retail Payments

The various retail payment mechanisms available to consumers in the United States are subject to numerous risks that could result in harm to the consumer. First, some types of payment instruments have value in and of themselves, and the *loss* of these instruments through theft or other circumstances results directly in financial loss to the consumer. Second, the *unauthorized use* of an instrument or unauthorized access to an account could also lead to the consumer's financial loss. Third, an *error* may occur in the processing of a payment resulting in loss to the consumer. Fourth, a payment instrument may be *dishonored* by the issuer or drawee. Fifth, a consumer may unexpectedly be *unable to use* a particular payment mechanism, either because of technological problems or because the mechanism is not acceptable to the payee. Finally, a consumer may face *unauthorized or unexpected use of consumer-specific payment information* by payment instrument issuers or others. These risks exist for stored-value products as well as for more traditional consumer payment instruments. Many of these risks have been addressed by laws or by market practices or by both.

1. Loss of Instrument. Some types of payment instruments have value in and of themselves, in that they are exchangeable for value by any bearer or holder. A consumer who loses a bearer instrument will incur a direct financial loss. The primary example of a bearer

⁴⁵ The U.C.C. has been adopted separately and fairly uniformly by every state.

⁴⁶ 15 U.S.C. § 1693 *et seq.*

instrument is a Federal Reserve note (currency), which is legal tender under federal law.⁴⁷ If a consumer loses currency, the Federal Reserve Banks will not replace it. If currency is stolen, the consumer generally has no recourse outside of pursuing a civil or criminal action against the thief.

A cashier's check, which is a check drawn by a bank on itself, and a certified check, which is a check a bank has "accepted" or agreed to pay, may be payable to bearer or to a particular payee. Under the U.C.C., a cashier's check or a certified check is the liability of the drawee bank rather than of the drawer or remitter; it is treated by many courts as an equivalent of cash.⁴⁸ Therefore, it is difficult for consumers to stop payment on these checks. The U.C.C. (as adopted in some states) allows for a refund on cashier's checks and certified checks only after a 90-day waiting period, provided certain conditions are met.⁴⁹ Within that 90-day period, the loss of a cashier's check or certified check payable to bearer is generally equivalent to the loss of currency. If the check is payable to a particular payee, however, only that payee or a party to whom the check had been properly transferred has the right to demand payment.

Other types of payment instruments may be replaced with varying degrees of difficulty. If a check payable to a consumer is lost or destroyed, the consumer can request the drawer to reissue the check. The U.C.C. allows the drawer to require the consumer to provide an indemnity to protect against double payment in the event that the original check reappears and is presented for payment.⁵⁰ In addition, the U.C.C. allows the drawer to stop payment on a check.⁵¹ Credit and debit cards generally have no value in and of themselves. Consumers can usually get replacement credit cards and debit cards quickly, under the rules that apply to each particular card's system. Card issuers provide this service to make their products more attractive.

Consumers may lose the entire balance on a stored-value card if the card is lost, stolen, or damaged. In the case of a software-based stored-value system, in which electronic records are stored on a consumer's personal computer, the electronic records could be maliciously or accidentally deleted. These risks are similar to the risk of losing currency, and consumers can reduce the risk by safeguarding their stored-value devices. However, the conditions that may be damaging to a smart card (and the type of damage caused, such as demagnetization) may be less obvious to consumers than the conditions that would damage currency.

Whether or not a stored-value device in the possession of the consumer contains the primary record of the consumer's funds is relevant to the magnitude of this risk. Some

⁴⁷ 31 U.S.C. § 5103.

⁴⁸ See, e.g., U.C.C. §§ 3-409 through 3-413.

⁴⁹ U.C.C. § 3-312.

⁵⁰ U.C.C. § 3-309.

⁵¹ U.C.C. § 4-403.

stored–value systems may be structured to allow for full or partial reimbursement for a lost device by the maintenance of a record of card payments and the capability of “turning off” a lost card. Other stored–value systems may not have a reimbursement feature because there are no records of transactions tied to a particular card and no means by which the use of a particular card can be stopped.

2. *Unauthorized Use.* Consumers also face the risk of financial loss due to unauthorized use of a payment instrument, which may or may not result from the instrument’s being lost or stolen. Unauthorized use is a relatively common problem for several types of payment instruments, such as checks, debit cards, and credit cards. If blank checks are stolen, the U.C.C. gives substantial protection by providing that the consumer is not liable on any check the consumer has not signed, placing the onus on the consumer’s bank to inspect the drawer’s signature.⁵² If a check is stolen and the payee’s endorsement is forged, the ultimate liability falls on the bank that first accepts the check for deposit because, under the U.C.C., that bank warrants the validity of the payee endorsement to all other parties in the check collection chain.⁵³ If the check is returned to the bank of first deposit, that bank may seek restitution from the customer whose account was credited.

With credit or debit cards, often an unauthorized user needs only the information from the card and not the card itself. The Electronic Fund Transfer Act limits a consumer’s liability for unauthorized use of a debit card in certain situations. The Truth in Lending Act limits a consumer’s liability for unauthorized use of a credit card.⁵⁴ In addition, issuers of travelers checks, credit cards, and debit cards often cover consumer losses due to unauthorized use in order to market their products more effectively.

The National Automated Clearing House Association (NACHA) has developed a set of standard rules governing automated clearinghouse (ACH) transactions. In the case of an ACH debit transaction, a consumer’s account is debited under the instruction of the payee, who must be operating with the consumer’s consent.⁵⁵ A consumer may return any unauthorized ACH debit transaction within a specified period of time.⁵⁶ A consumer’s liability for unauthorized ACH debit transactions is also limited by the Electronic Fund Transfer Act.

In some electronic stored–value systems, transactions can be executed only through the physical presentation of a card to a merchant terminal and thus are not susceptible to unauthorized use *unless* the card is stolen from the consumer. Depending on the type of transaction and the system design, however, an unscrupulous merchant could deduct a greater

⁵² U.C.C. § 3–401.

⁵³ U.C.C. § 4–207.

⁵⁴ 15 U.S.C. § 1601 *et seq.*

⁵⁵ NACHA Operating Rule 2.1.7.

⁵⁶ NACHA Operating Rule 7.6.1.

amount than the consumer had authorized without the consumer's knowledge. In contrast, other types of products that involve a simple access number (such as prepaid telephone cards) do not necessarily require physical use of the card to complete payments; these products may be more vulnerable to unauthorized use. Stored-value system data stored on a personal computer could also be copied through unauthorized access to the computer, such as over a computer network.

Consumers who are particularly concerned about theft or unauthorized use may choose to use payment instruments with refund capabilities, and they may be willing to pay for this extra degree of security in cases involving larger amounts of funds. With some stored-value products, refund capabilities could entail significant added costs for issuers related to determining outstanding balances on consumer cards or devices, blocking them from further use at the point of sale, and developing procedures to prevent consumer fraud. For stored-value products designed for small-value transactions, such capabilities may not be cost-effective for either the issuer or the consumer.

Electronic stored-value products can also be designed with features that provide greater control for the consumer, although potentially at the expense of speed and cost. Some products would require a PIN or signature at the point-of-sale terminal, which would help prevent unauthorized use of the device as well as errors and disputes. Other products would permit consumers to "lock" their card or data stored on a personal computer with an access code or password in order to prevent unauthorized use.

3. Errors. If an error occurs in the processing of a payment, the payment may be made to the wrong party or for the wrong amount. With currency, the consumer generally has control over who receives the payment and how much is tendered. The consumer could make an error in the amount of currency tendered, but an error that is not detected by the consumer or the payee at the time of the transaction may be difficult to prove or correct later.

With checks, various types of errors could occur. A consumer could mistakenly write a check for the incorrect amount. If the payee received payment for more than the amount actually owed, the drawer would likely have a claim for restitution against the payee. Similarly, the payee likely would continue to have a claim on the underlying obligation if the check were written for less than the amount owed. Another type of check-related error could occur if a consumer's bank debits the consumer's account in error for more (or less) than the actual amount of a check. The U.C.C. requires the bank to make an account statement available to the consumer so that the consumer can verify the accuracy of charges to the account.⁵⁷ Generally, discrepancies between the amount of a check and the amount charged to an account are corrected once either the bank or the consumer identifies the error.

⁵⁷. U.C.C. § 4-406.

The Electronic Fund Transfer Act provides error-resolution procedures for debit cards and other payments subject to that act, as discussed below, and the Truth in Lending Act similarly provides rules for the correction of credit card billing errors.

Errors or malfunctions are also a potential risk in the use of stored-value cards. Errors could occur if a merchant enters the incorrect payment amount to be debited from the consumer's stored-value device. The likelihood of such errors may depend on the degree of human intervention in executing a payment and the extent to which consumers have the ability to verify the payment amount before completing the transaction; these features differ across stored-value products.

Malfunctions also could occur in the use of a stored-value product, for example, when a consumer's stored-value device is debited but the merchant's terminal is not credited because the consumer withdrew the card too soon. Such disruptions or malfunctions could cause a temporary inability to complete a payment or could cause financial losses.

Issuers of electronic stored-value products will likely devote substantial resources to monitoring and improving the reliability of electronic stored-value products once they are placed in widespread usage. Issuers may also institute policies for investigating errors reported to them by consumers. Nevertheless, consumers are not likely to continue to use a stored-value product that they find to be susceptible to errors or to inconvenient malfunctions.

4. Dishonor. Consumers may face the risk that a particular payment instrument will be dishonored by the issuer or drawee. Payment instruments may also be returned because of the default of the issuer or drawee. These risks generally do not exist with currency, as Federal Reserve Banks do not dishonor notes other than those that are counterfeit (and counterfeits are rarely traceable to a particular consumer) and Reserve Banks present no default risk. A check or an ACH debit transaction might be returned by the payor's bank for various reasons, such as insufficient funds in the account, lack of authorization from the payor, or failure of the drawee bank. Under these circumstances, the payee may seek recovery from the payor on the underlying debt based on general contract law. In addition, the U.C.C. provides that a payor's bank is liable to its customer for damages proximately caused by the wrongful dishonor of a check, such as refusal to pay a check that is properly payable from the account and that would not cause an account overdraft. In some cases, the bank may also be liable for consequential damages.⁵⁸ As discussed in section VI, many state laws governing nonbank money transmitters, such as issuers of travelers checks, protect consumers against issuer default by requiring the issuer to collateralize all outstanding instruments with high-quality, low-risk assets.

Credit and debit card transactions are usually verified by the payee before the transaction is completed (e.g., before a merchant releases goods to the consumer) using an on-line

⁵⁸ U.C.C. § 4-402.

communications system, thereby protecting the payee and the consumer from the risk of dishonor later. Generally credit and debit card system rules provide that card issuers are accountable for the amount of any properly verified transactions. If an issuer defaults, many credit card systems will implement loss-sharing allocation rules among other issuers of the card, thereby averting losses to consumers and merchants. In addition, the Electronic Fund Transfer Act makes financial institutions liable to their customers for wrongfully “dishonoring” an electronic payment instruction (i.e., not completing an electronic payment that is properly authorized and for which sufficient funds are available).

Similarly, most electronic stored-value systems have been designed so that all necessary technical and financial authorization for a payment is completed at the point of sale. As a result, payments are unlikely to be dishonored after the fact. At the same time, consumers lose the stop-payment or chargeback features available with some other payment methods, which they may find useful in preventing merchant fraud or other disputes. As a result, consumers may avoid using stored-value products for large-value payments or for payments in which merchant reliability is of concern, such as for remote purchases.

Dishonor of an electronic stored-value product could arise if the financial condition of the issuer were called into question. In the event of an issuer default, merchants could face risks of loss similar to those with credit or debit card transactions. For consumers, an issuer default could lead to financial losses up to the amount of prepaid funds currently held on a stored-value product.⁵⁹ The magnitude of this risk depends on factors such as the investment policies of the issuer and the nature of the consumer’s claim in bankruptcy, including whether the consumer holds a direct claim on a specified pool of assets or whether the product is covered by some third-party insurance system. Such considerations are similar to those of other prepaid payment instruments, such as travelers checks and money orders, as well as for payments drawn on bank deposits.

The Federal Deposit Insurance Corporation recently determined that stored-value cards issued by depository institutions in most cases are not covered by federal deposit insurance.⁶⁰ To mitigate concerns about issuer insolvency, electronic stored-value products issued by groups of institutions may institute loss-sharing arrangements such that members cover any shortfall caused by a participant’s default, as is common in credit card associations. Others may publicly disclose their investment policies or, more likely, establish specialized subsidiaries to issue stored-value products, a method commonly used in other areas of financial services where the

⁵⁹. Depending on when the consumer’s obligations are deemed to be discharged, the consumer may also be liable to merchants for goods purchased with a stored-value card if the merchant is unable to collect from the defaulting issuer. See, generally, “A Commercial Lawyer’s Take on the Electronic Purse” (Third Discussion Draft, July 31, 1996), Task Force on Stored Value Cards, Business Section of the American Bar Association.

⁶⁰. Federal Deposit Insurance Corporation General Counsel’s Opinion No. 8, 61 FR 40490 (August 2, 1996).

issuer's credit risk is a concern. Stored-value issuers can invest in high-quality, low-risk assets, such as short-term government securities, and can segregate assets for the benefit of stored-value card holders, as many money transmitters do. Some types of stored-value products may be required to take these actions, to the extent that they are subject to state money transmitter laws.

Fraud or counterfeiting could also lead to dishonor at the point of sale or thereafter. Some stored-value systems would be able to detect counterfeit balances or devices at the point of sale. A consumer who unknowingly accepted a fraudulent or counterfeit device might find that the device was rejected for transactions. Reimbursement policies in such situations would thus be of concern to consumers as well as to merchants.

5. *Inability to Use a Payment Mechanism.* For various reasons, a consumer might be unable to use a particular payment mechanism. This situation would not necessarily result in a financial loss to the consumer but might unexpectedly prevent a consumer from discharging a debt or obtaining goods or services, result in late fees or other penalties, or at the very least, cause embarrassment.

A consumer might be unable to use a payment instrument because of a defect in the instrument. For example, a credit card or debit card might have a demagnetized strip or a damaged chip, causing the card to be rejected at the merchant's card-reading machine. To encourage the use of their products, banks and other card issuers generally provide replacements for damaged cards relatively quickly. A damaged check may be delayed in the collection process if it cannot be handled by a check-sorting machine, but usually it is ultimately collected.

Merchants or other payees may refuse certain types of payment instruments for reasons other than defects in the instrument. Currency, which has the status of legal tender under federal law, must be accepted in payment of a debt unless the parties agree otherwise. Payees need not, however, accept credit or debit cards or checks and do so only voluntarily. Credit card and debit card issuers and associations usually attempt to sign up merchants to accept their cards to maximize the utility of the card for consumers.

Electronic stored-value products are not likely to be widely accepted for some time. Moreover, they are not legal tender and, as in the cases of checks and credit and debit cards, merchants are not obligated to accept them as payment. Thus consumers may face the risk that stored-value products cannot be used at the time and place they desire. With some stored-value products, consumers could also be left with unused balances that could not be readily converted to other forms of payment. For example, a stored-value card may be designed to expire after a certain date, with or without a window of time for the consumer to exchange the expired card for a new one. Consumers who are unable to use a card because of malfunctions or card expirations may suffer financial losses if they cannot obtain reimbursement from the issuer.

Consumers typically reduce risks that they will be unable to make payments by carrying more than one form of payment with them. In doing so, they must weigh the benefits of maintaining access to additional payment options against any inconvenience and fees involved in doing so. The same is likely to be true of electronic stored-value products.

6. Privacy Concerns. Another potential risk to consumers is that information regarding the amount and location of payments they make will be collected and used for purposes unknown to or unauthorized by them. For example, information regarding a particular consumer's spending habits could be captured in a database and sold to a marketing or other kind of firm. This information might also be used to monitor the activities of individuals without their knowledge, either by law enforcement officials or by other third parties. Generally, electronic payments are more susceptible to this kind of risk than are other types of payments because of the relative ease of capturing electronic data. With the increase in use and sophistication of electronic payments, many consumers are becoming more concerned about the privacy of their payment information.

Electronic stored-value products do not appear to raise materially different risks than those related to other electronic payment products, such as credit and debit cards. Although the size of transactions captured on stored-value systems may be significantly smaller than those for credit or debit cards, the number of transactions captured may be greater. Consumers may have concerns about increased access by others to more detailed information about their daily habits.

Consumers who are concerned about the privacy of transaction information can use paper currency and coins rather than stored-value products or other electronic payment methods. Indeed, some stored-value systems for use over computer networks have been designed to provide some degree of anonymity in executing payments. Those stored-value cards sold at vending machines in exchange for currency do not permit consumer identities to be ascertained. As a growing emphasis on privacy has emerged, issuers or merchants may choose to disclose to consumers their policies on the use of personal data or allow consumers to opt out of any data-collection system. Such policies appear to be increasingly common for conventional payment methods and transactions.

Moreover, financial institutions and others may be subject to actionable common law duties not to disclose confidential customer information. In addition, at least two federal laws have tried to address this concern.⁶¹

The Electronic Communications Privacy Act provides that any unauthorized person who intentionally intercepts electronic communications shall be subject to criminal penalties or civil

⁶¹. Besides the two laws discussed below, the Fair Credit Reporting Act (15 U.S.C. § 1681 *et seq.*) restricts the use of consumer reports (which could include information on a consumer's payment activity) and is designed to provide consumers with the opportunity to correct erroneous reports.

suit.⁶² “Electronic communication” includes any data transfer over a wire that affects interstate or foreign commerce and therefore could include at least some components of an electronic payment system depending on how it is structured. For example, computer-to-computer communications over the Internet would be covered by this act. It contains exceptions in certain cases, including when one of the parties consents to the interception. Thus, it appears that the act would not prohibit, for example, a merchant who is a party to an Internet electronic payment transaction from retaining and disclosing information regarding the communication.

The Electronic Communications Privacy Act also prohibits unauthorized access to electronic communications in electronic storage, except as authorized by the person or entity providing the electronic communications service. In addition, it prohibits the unauthorized disclosure of the contents of an electronic communication in electronic storage by any entity that provides an electronic communication service to the public. “Electronic storage” includes any temporary, intermediate storage of an electronic communication incidental to the electronic transmission thereof and any backup storage.

The Right to Financial Privacy Act is intended to provide customers of financial institutions with a reasonable amount of privacy from federal government scrutiny of their financial transactions.⁶³ This act establishes specific procedures for government authorities that seek information about a customer’s financial records from a financial institution. It also imposes limitations and duties on financial institutions before the release of information sought by government agencies. It generally requires that the customer receive (i) a written notice of the agency’s intent to obtain financial records, (ii) an explanation of the purpose for which the records are sought, and (iii) a statement describing procedures to use if the customer does not wish such records or information to be made available. The act applies only to records of financial institutions (depository institutions and credit card issuers) and only to government access to those records.

B. Risks Addressed by the Electronic Fund Transfer Act

Payment-related risks can be addressed by laws, market practices, or the actions of consumers themselves.⁶⁴ Even when legislative bodies attempt to address consumer payment-related risks by enacting laws, these laws do not usually address the full panoply of risks that exist but rather focus on a subset of risks. Such is the case with the Electronic Fund Transfer Act, which addresses primarily risks related to unauthorized use, the detection and

^{62.} 18 U.S.C. § 2510 *et seq.*

^{63.} 12 U.S.C. § 3401 *et seq.*

^{64.} Section VI.C.1. discusses some of the legal regimes that may apply to consumer payment mechanisms as well as to the laws discussed in section IV.A.

resolution of errors, certain types of dishonor, and the disclosure of terms. The act does *not* address the risk of loss or destruction of an instrument (unaccompanied by unauthorized use), which is one of the primary risks associated with stored-value cards. It also does not generally address risks related to the inability to use an instrument or privacy matters.

1. Background. The legislative history of the Electronic Fund Transfer Act indicates that the Congress' primary goal was to protect consumers. The act eliminates uncertainties in the market on the part of both consumers and financial institutions regarding their liabilities related to electronic payments. When the legislation was enacted in 1978, many electronic payment mechanisms—such as ATMs, direct deposits via the ACH, telephone bill payments, and point-of-sale debit transfers—were fairly new but were growing rapidly in popularity. The rise in electronic payments was accompanied by a rise in computer-related crimes, and few federal or state laws addressed these problems. The Congress cited computer crime reports and other anecdotal evidence of consumer and bank losses involving electronic funds transfer services as a reason for establishing consumers' rights.⁶⁵ Although providers of electronic payment services argued that the act was premature and that the electronic payment market should be allowed to develop further on its own, the Congress believed that establishing a framework of rights and duties for all parties would benefit both consumers and providers.⁶⁶ Besides the act, other rules (such as the NACHA rules) and market practices (such as daily limits on the amount that can be withdrawn from an ATM) have developed to address consumer risks in electronic payments.

The market failure that the Congress appears to have been addressing in the Electronic Fund Transfer Act is the lack of full information, which may have prevented consumers from adequately assessing the risks of using electronic fund transfer services. Many provisions of the act are designed to provide consumers with information about the rights and liabilities associated with such services. The act also limits and assesses liability in certain situations and prohibits certain practices. In effect, it imposes contract terms on the parties that may have nothing to do with the availability of information.

⁶⁵ One of the motivating forces behind the enactment of the law was the report of the National Commission on Electronic Fund Transfers (NCEFT) (*EFT in the United States*, Final Report of the National Commission on Electronic Fund Transfers, Washington, D.C., October 1977). The NCEFT undertook a broad assessment of consumer risks in using electronic fund transfer systems that were emerging or being used in a greater degree at that time, including ATMs, debit cards, and the ACH. The NCEFT stated in its report that, in general, the appropriate approach to the evolving electronic payment services was to allow their growth to occur free from unnecessary regulation and open to marketplace pressures and consumer demands. However, the report stated that existing law and regulation were incomplete or not applicable to electronic payment services and that some consumer concerns were “so fundamental that they should be addressed at this time in order to guarantee to consumers a number of basic rights in an EFT environment” (*EFT in the United States*, p. 6). Accordingly, the NCEFT made recommendations for legislation in various areas, including initial disclosures of account terms, documentation of transactions, stop payment, liability for unauthorized transactions, resolution of errors, system malfunctions, compulsory use of electronic fund transfers, and unsolicited issuance of debit cards.

⁶⁶ See, S. Rep. No. 95-915, at 2-3 (1978) and H.R. Rep. No. 95-1315, at 2-4 (1978).

2. *Unauthorized Use.* The Electronic Fund Transfer Act addresses the risk of unauthorized electronic debits to consumers' accounts through two principal means. The first is a limitation on the consumer's liability for unauthorized electronic transfers of funds; under the act, the institution may hold the consumer liable for no more than \$50 in most cases. If the consumer fails to notify the institution within two business days after learning of the loss or theft of a debit card or other access device, however, the consumer can be held liable for up to \$500; and if the consumer fails to notify the institution within sixty days after a periodic statement is sent showing an unauthorized transfer, the consumer bears all liability for any further unauthorized transfers after that time.

To impose liability for unauthorized transfers, an institution must meet three conditions. First, the access device involved (e.g., the card) must be "accepted," meaning generally that it must have been requested and received by the consumer before the loss or theft. Second, the institution must have provided a means of identifying the holder of the device—in most cases, a PIN. Third, the institution must have disclosed to the consumer the limitations on the consumer's liability under the act, along with a telephone number and address for notifying the institution of loss or theft. (Under the act, consumer negligence is not a prerequisite for consumer liability.) An unauthorized transfer, however, generally does *not* include a transfer performed by a person to whom the consumer voluntarily gave a card or an access code.

3. *Errors.* Another category of risk addressed by the Electronic Fund Transfer Act involves the possibility of errors or malfunctions occurring in the operation of an electronic payment system. Errors and malfunctions could include (i) the failure of a transaction to be completed (for example, a deposit at an ATM is not credited to the consumer's account or a payment to a third party is not made); (ii) a transaction executed in an incorrect amount; and (iii) other errors, such as payments made to the wrong party or at the wrong time. The act addresses the potential risk of errors primarily by requiring documentation of electronic transactions, which serves to alert consumers to potential errors, and by mandating error resolution procedures.

Any transaction initiated at an "electronic terminal" (including ATMs and point-of-sale terminals, but not telephones or home computers) must be documented by a receipt. The receipt must include the amount, date, and type of transaction; the type of account involved; an identifying number such as the account or card number; the terminal location; and, if a payment to a third party is involved, the name of the third party. In addition, all electronic transactions (including those initiated by telephone or home computer) must be documented on periodic account statements. The statement shows the same items of information that the terminal receipt does and contains other information, such as opening and closing balances for the statement

period. The terminal receipt and the periodic statement enable the consumer to detect errors promptly and to take action to get the problem resolved and prevent recurrences.

The Electronic Fund Transfer Act also requires that institutions investigate and resolve a claim by a consumer that an error has occurred, such as when a point-of-sale debit card payment to a merchant is shown on the statement as \$200 and should have been \$20. The institution may complete the process within ten business days after receiving notification from the consumer; alternatively, it may provisionally credit the consumer's account for the amount of the alleged error within ten business days and then take up to forty-five calendar days to resolve the matter.

Another provision addresses errors involving preauthorized (recurring) transfers by providing the consumer with the right to stop payment. If a consumer has authorized a third party to initiate a series of electronic debits (for example, through the ACH system) to the consumer's account, the consumer may stop payment of such a preauthorized debit any time up to three business days before the scheduled date of the debit. If an institution receives a stop-payment order but fails to stop the debit, the institution is liable to the consumer for all damages proximately caused. The act does not provide a stop-payment right for other types of electronic payments, such as debit card transactions.

4. Dishonor. The Electronic Fund Transfer Act protects the consumer from liability when an electronic payment to a third party is not completed as directed by the consumer. For example, if a consumer uses a home banking system to order payment of an electric bill but the institution fails to make the payment, the institution is liable to the consumer for all damages proximately caused by the failure to make the payment correctly. This provision generally parallels the wrongful dishonor rule for checks under the U.C.C.

5. Disclosure of Terms. At the time that a consumer contracts with an institution for an electronic fund transfer service, the institution must provide a disclosure of terms and conditions of the service, including the consumer's liability for unauthorized transfers, fees imposed by the institution, the consumer's right to have errors resolved, and the institution's policy regarding release of information to third parties about the consumer's account. If certain terms change adversely for the consumer—for example, if fees increase—the institution must provide a notice at least twenty-one days before the effective date of the change. These disclosure requirements enable consumers to make an informed choice among providers of electronic funds transfer services and between electronic fund's transfers and other forms of payment. If, for example, a consumer decides that the ATM fees charged by a particular institution are excessive, the consumer may go to a competing institution or decide not to use ATM services at all.

6. Other Provisions of the Act. Finally, the Electronic Fund Transfer Act contains provisions that are designed to prevent financial institutions from requiring that consumers use electronic payment mechanisms. The risk of institutions imposing this requirement appears to be

low, given the availability of alternative payment mechanisms and the ability of consumers to obtain services from other financial institutions. Nevertheless, the act attempts to address perceived risks related to consumer choice by placing restrictions on the actions of financial institutions. With limited exceptions, institutions are prohibited from sending a debit card or other access device to a consumer unless the consumer has requested it. In addition, the use of preauthorized debits as a means of repayment may not be made a condition of extending credit, nor may acceptance of preauthorized credits (direct deposit) at a particular institution be made a condition of employment or for receipt of government benefits. Finally, institutions may not enter into agreements that require consumers to waive their rights under the act.

C. Summary

Consumers who use retail payment instruments are exposed to many types of risks of varying degrees of magnitude. In general, electronic stored-value products give rise to the same types of risk that other payment instruments do, although the degree of particular risks may vary because of differences in operating characteristics of the payment instruments. Consumers have incentives to mitigate risks through their own actions, when possible, and issuers of payment instruments have incentives to mitigate risks to sell their products. In addition, some consumer risks are addressed by laws, such as the U.C.C. and the Electronic Fund Transfer Act. The latter protects consumers from some risks associated with the use of many electronic payments, such as the risks of unauthorized use and errors, but not from others. It is unclear whether the market failures that prompted passage of the act exist for electronic stored-value products. The benefits of applying the act's provisions to electronic stored-value products could include consistency in policies and information regarding some consumer risks. Costs and other drawbacks of applying it to these products are discussed in the next section.

V. Potential Costs of Applying Regulation E Requirements to Stored–Value Products

Regulation gives rise to different types of costs. This section discusses the types of regulatory costs and analyzes the ways in which Regulation E requirements might affect the cost of providing electronic stored–value products. The analysis draws on qualitative and statistical evidence of compliance costs for Regulation E, public comments submitted in response to the Board’s recent proposal to apply selected Regulation E requirements to some stored–value products, and statistical studies of regulatory cost functions.

A. Definitions

The cost of regulation consists of opportunity and operating costs that arise from activities or changes in activities that are required by government. Opportunity costs occur when a regulation causes the producer to forgo profitable activities. They generally result from prohibitions of certain activities. For example, in banking, branching restrictions may prevent banks from taking advantage of profitable lending opportunities outside their local areas and may also make them vulnerable to downturns in local business conditions. Another opportunity cost is the forgone interest from the prohibition of investing reserves in interest–bearing assets. Opportunity costs also arise when regulation increases costs to such an extent that they discourage the introduction of a new product.

Operating costs arise from requirements that banks perform certain tasks. Regulatory requirements include reports to the government (call reports, currency transaction reports, 1099 reports), consumer disclosures (Truth in Lending, Truth in Savings), and standards for operating procedures (Expedited Funds Availability, error–resolution procedures). In each case, employee time, material, and equipment must be devoted to performing specific activities; and managerial efforts must be devoted to understanding requirements of the regulation, implementing required actions, and ensuring compliance with the regulation.

There are two types of operating costs—start–up and ongoing. Start–up costs are the one–time costs of changing activities to conform to the requirements of a regulation. They include legal expenses for interpreting the regulation, advising managers, and reviewing procedures and forms; managerial expenses for reviewing and revising procedures and forms, coordinating compliance activities, and designing internal audit programs; training expenses; costs for information systems and storage of records; expenses for programming and testing of software; and costs of designing new forms and destroying obsolete forms.

Ongoing costs are the recurring costs of performing the activities required by a regulation. Ongoing costs include costs such as managerial expenses for monitoring employees’ compliance and for coordinating compliance examinations with regulatory agencies; labor

expenses for preparing reports and disclosure statements; expenses for resolving errors; and printing and postage for disclosures.

The distinction between start-up and ongoing costs may not always be clear. If a regulation changes frequently, the process of monitoring and implementing changes in the regulation may in itself be an ongoing activity, and the cost of this activity may legitimately be considered an ongoing cost. In some cases, the cost of implementing frequent changes may be substantial and possibly greater than other recurring costs.⁶⁷ The distinction between start-up and ongoing costs also may not be clear when the regulatory requirements for product innovations are considered. New products and changes in features of existing products may not fit clearly into regulatory definitions, making it necessary for managers to make efforts to learn the appropriate regulatory treatment of the product or feature. Managers' time and the possible delay in introducing innovations may be considered an ongoing cost in a dynamic market.

Some regulations require institutions to perform activities that they would not do in the absence of regulation. The Bank Secrecy Act, which requires banks to file with the government reports of certain currency transactions, is an example of this type of regulation. Other regulations govern activities that banks would perform in the absence of regulation. For example, the Truth in Savings Act requires that disclosures of deposit account terms contain certain information at certain times. Many banks would provide disclosures without being required to do so, and indeed most banks provided disclosure statements before the law was enacted (although banks generally did not provide all of the information exactly as required by the law).

The total cost of a regulation is the cost of performing all of the activities that it requires. The incremental cost of a regulation is the cost of activities that are performed only because the law mandates them.⁶⁸ Activities that are mandated by the law but would be performed in the ordinary course of business are part of the total cost of a regulation but not part of the incremental cost. Because total cost includes costs that banks would have incurred anyway, incremental cost is a more relevant measure of the economic cost of a regulation than total cost. In some cases, total cost and incremental cost may be the same, but in other cases they may differ. In the case of the Bank Secrecy Act, for example, the total cost of performing the activities required by the regulation is probably about equal to the incremental cost. In the case

⁶⁷. Formal rulemaking is not the only way that regulatory requirements may change. In some instances, agency interpretations or court decisions can also change regulatory requirements.

⁶⁸. The benchmark for determining the incremental cost of a regulation may not be an unregulated regime. For example, when the Federal Trade Commission issued the Credit Practices Rule, which restricts legal remedies available to creditors in the event of consumer default, the use of creditor remedies was already regulated by the states. Some states restricted or prohibited one or more of the creditor remedies governed by the Credit Practices rule. For further discussion of benchmarks for measuring regulatory costs, see Paul L. Joskow and Nancy L. Rose, "The Effects of Economic Regulation" in *Handbook of Industrial Organization*, vol. II, R.D. Schmalensee and R.D. Willig, eds. (Amsterdam: North-Holland Publishing Company, 1989).

of the Truth in Savings Act, however, since most banks provided disclosure statements without the regulation, the incremental cost is likely to be less than the total cost.

The need to identify required activities that would be performed in the absence of regulation makes measurement of incremental regulatory costs difficult. Over time, many such activities may come to be viewed as part of routine banking business—especially if they are a relatively small part of a necessary or unregulated activity—and thus may be overlooked when identifying regulatory activities. Moreover, regulation may force an institution to perform an activity in a different, more costly way than it would otherwise choose. This added cost is a component of incremental cost, but it may be easy to overlook and difficult to measure.

B. Description of Compliance Activities and Evidence of Costs Associated with Regulation E

Experience with Regulation E provides a logical starting point for assessing the possible costs of applying consumer protection regulations to electronic stored-value products. Comments received from the public in the 1978–79 rulemaking and a survey of compliance costs conducted by the Federal Reserve Board in 1981 provide a description of the activities that were required to comply with Regulation E. In addition, the survey provides quantitative estimates for the cost of compliance with the regulation. This subsection discusses the sources of incremental compliance costs associated with Regulation E. Many of these costs are generic to any regulation; others occur because of specific Regulation E requirements.

1. Start-up Costs. Many requirements of Regulation E mandate actions that banks would take in the normal course of business.⁶⁹ For example, even before Regulation E, banks typically provided periodic statements containing a list of electronic and other transactions. They provided receipts for many transactions, had procedures for resolving errors, and may have informed customers about account terms and changes in terms through written disclosures. Deposit accounts also provided customers with certain protection against unauthorized use in the case of checks.⁷⁰ Despite the similarities between existing practices and the regulation's requirements, all banks incurred some start-up costs. Even banks that performed all of the required activities probably did not perform them exactly as specified in Regulation E.

To bring the bank's policies and procedures into compliance with Regulation E, bank managers first had to spend time learning the requirements of the regulation. Managers had to review existing policies, procedures, forms, and manuals and modify them to comply with the regulation; coordinate employees' compliance activities; and design an audit program to ensure

⁶⁹ The Electronic Fund Transfer Act and Regulation E do not apply solely to banks. The regulation applies to any provider of consumer deposit accounts that are subject to electronic transfers, including deposit accounts at thrift institutions and accounts at brokerage or mutual fund companies.

⁷⁰ The Uniform Commercial Code protects consumers from unauthorized withdrawals from deposit accounts by checks by providing that consumers are not liable for checks that they have not signed. See section IV of this report.

compliance. Legal services were required to interpret the regulation and provide guidance to bank managers. Bank employees had to be trained to carry out the new procedures, which were designed to implement the requirements of the regulation.

Banks also incurred expenses for design and editing of forms and disclosure statements, modification or disposal of old forms, and printing an initial inventory of new forms and disclosure documents. Data processing systems had to be changed to retain, process, and report the information required by the regulation at times specified in the regulation. These changes may have included programming, purchases of new software, testing, purchases of terminals and other hardware, installation of equipment, and construction of premises for equipment.

2. Ongoing Costs. Incremental costs, measuring only costs that are incurred because of regulation, are more appropriate than total costs as a basis for measuring regulatory costs. Since many of the requirements of the regulation involved modifications of existing activities rather than the performance of new activities, not all activities required by Regulation E would have given rise to incremental costs. Sending periodic statements, for example, would generally not be an incremental cost, although additional paper, computer usage, and postage might be incremental costs if, say, location and other information required to identify individual electronic fund transactions were not reported in the absence of regulation. Similarly, bank employees' time spent answering customer enquiries and resolving alleged errors would not all be incremental costs. Regulation E may have stimulated some additional enquiries or claims of errors. The cost of responding to these additional enquiries and claims of errors is appropriately classified as an incremental cost, even though determining the additional cost due to the regulation may be difficult.

The salary and overhead expenses for a compliance officer or department is an incremental cost. The time that the compliance officer or department devotes to compliance with Regulation E is part of its ongoing cost. Internal auditing of compliance with regulations; coordination of the compliance reviews with supervisory agencies; monitoring changes in the regulation, interpretations, and court decisions; and modifying compliance procedures are all recurring costs that are incurred solely because of regulation. Legal services for review of any additional complaints; interpretation of changes in the regulation, interpretations, and court decisions; and expenses of litigation are incremental costs.

As mentioned, only part of bank employees' time spent responding to enquiries and resolving alleged errors would be incremental. Time spent documenting compliance with regulatory requirements would be an incremental cost. Training expenses for maintaining employee skills and informing employees of new regulatory requirements would also be incremental costs.

Some banks may not have made all of the required disclosures in the absence of the regulation (e.g., annual notices of error–resolution procedures or notices for preauthorized transfers) and may have incurred incremental ongoing costs for printing or purchasing of disclosures and additional postage expense for mailing these disclosures. Some banks may have incurred telephone expenses for error–resolution activities and preauthorized transfer enquiries beyond those that they would have incurred without regulation. Additional losses due to consumers’ limited liability (perhaps in cases where consumers write PINs on ATM cards, for example) and civil damages due to violations of the regulation would also be ongoing incremental costs of Regulation E.

3. Survey Evidence. Unfortunately, the most recent survey information available is somewhat dated. In 1981, the Federal Reserve Board conducted a mail survey to gather information about compliance costs for several consumer protection regulations. Regulation E, which became effective in 1979, was one of the regulations included in the survey. Sixty–seven banks that volunteered to participate in the survey responded to the questionnaire. Banks were asked to estimate their start–up costs for implementing Regulation E and their incremental ongoing expenses of the regulation in 1980. The questionnaire specified cost categories for reporting the data, defined incremental cost, provided guidance on the way to estimate costs, identified the major requirements of the regulation, and listed possible activities to satisfy regulatory requirements. These questionnaire design features helped stimulate respondent memory and ensure uniform responses.

Survey responses indicated that start–up costs for Regulation E were on average 10 cents per electronic transaction and annual ongoing incremental costs were about 11 cents per electronic transaction (see table 1, at the end of the report).⁷¹ In 1980, approximately 1.3 billion electronic transactions occurred, implying start–up costs of \$130 million and ongoing incremental costs of \$140 million per year.⁷²

The survey responses suggest that the cost of complying with Regulation E may have been a significant component of the cost of electronic transactions. A contemporary study

71. Statistics in the table are adapted from Frederick J. Schroeder, *Compliance Costs and Consumer Benefits of the Electronic Fund Transfer Act: Recent Survey Evidence*, Staff Study 143 (Board of Governors of the Federal Reserve System, 1985). Compliance cost per transaction is based on the total number of electronic transactions in 1980. Schroeder’s averages for deposit–size groups are weighted by aggregate deposit data for the population.

72. Estimates for the number of electronic transactions are from statistics on automated clearinghouse, automated teller machine, and telephone bill payment activity reported in Bank for International Settlements, *Payment Systems in Eleven Developed Countries* (Bank Administration Institute, 1980 and 1983); and Linda Fenner Zimmer, “ATM Acceptance Grows, Builds Customer Base for Other EFT Services,” *Magazine of Bank Administration* (May 1981), p. 31.

estimated a direct cost of 7 cents for making direct deposits of social security payments.⁷³ Thus, regulation may have more than doubled the cost of this transaction to about 18 cents per deposit.⁷⁴ Other types of electronic transactions may have had different costs, but it seems reasonable to believe that compliance with Regulation E accounted for a substantial share of the cost of making electronic transactions.⁷⁵

Table 1 also shows that large banks reported somewhat lower start-up and ongoing incremental compliance costs for Regulation E than smaller banks did. These results are consistent with the existence of economies of scale. If there are economies of scale, then the ongoing costs of compliance for the regulation may be lower today (because of the much greater number of electronic transactions) than they were in 1980.

The survey responses indicate that the time that managers spent learning the requirements of the regulation and modifying procedures to comply with them contributed substantially to the start-up cost for implementing Regulation E. Managerial expenses accounted for more than one-third of total start-up costs overall and nearly one-half of total start-up costs at banks with less than \$500 million in deposits (see table 2 at the end of the report). The cost of modifying data processing systems accounted for another third of total start-up costs overall.

In contrast to start-up costs, ongoing costs included substantial expenses for nonsupervisory labor. Overall, 43 percent of ongoing costs to comply with Regulation E were for nonsupervisory employees, who perform routine activities such as preparing and distributing disclosure statements, explaining disclosed information to customers, and resolving errors and disputes. The managerial and legal expenses were a smaller share of ongoing costs than start-up costs, accounting for 26 percent of the ongoing costs for Regulation E. The small but significant share of management and legal expenses arose from the need to monitor employees' compliance; coordinate compliance reviews with regulators; handle customer disputes that nonsupervisory employees were unable to resolve; and learn regulatory changes, regulator interpretations, and court decisions that affected compliance.

⁷³ Peat, Marwick, Mitchell & Company and Electronic Banking Inc., *The Costs and Benefits of Participation in the Treasury's Direct Deposit Program*, prepared for the Bank Administration Institute, National Association of Mutual Savings Banks, United States League of Savings Associations, and United States Department of the Treasury, Vol. 1 (Park Ridge, Ill.: Bank Administration Institute, 1981), p.7. This estimate includes a 0.3 cents cost for sending the Regulation E notification for direct deposit payments. It does not include any of this transaction type's share of the fixed costs of compliance.

⁷⁴ The cost of regulatory compliance was not high enough to compromise the cost advantage of direct deposit. The same study estimated a direct cost of 24 cents for depositing social security checks with a human teller and 59 cents for depositing social security checks by mail.

⁷⁵ In some activities, cost reductions are achieved over time simply because of learning. See Kenneth Arrow, "Economic Welfare and the Allocation of Research for Invention," in R. Nelson, ed., *The Rate and Direction of Inventive Activity: Economic and Social Factors* (Princeton: Princeton University Press, 1961). There is no evidence as to whether learning causes cost reductions in regulatory compliance. If there are cost reductions from this source, ongoing incremental costs of compliance for Regulation E would be lower today than they were in 1980.

4. Economies of Scale. As discussed in section II, the existence of economies of scale in regulatory compliance costs might discourage new products because high per-unit costs occur when output is still relatively low. Using data from the Federal Reserve cost survey, Schroeder investigated the scale economies in compliance costs for Regulation E.⁷⁶ Schroeder estimated separate log-linear cost functions for start-up and ongoing costs, with cost being a function of scale and several output homogeneity variables (type of EFT services offered, number of offices, and asset size of the organization owning the bank). Estimated coefficients from this function indicate the percentage change in cost associated with a percentage change in an explanatory variable. A value less than one for the scale coefficient, indicating that costs increase less than proportionately with scale, implies the existence of economies of scale.

For studying start-up costs, Schroeder measured the scale of operations by the amount of checking and savings deposits owned by individuals, partnerships, and corporations.⁷⁷ The estimated coefficient for scale was significantly less than one, suggesting that start-up costs for Regulation E increased less than proportionately with the amount of deposits.⁷⁸ The size of the estimated coefficient indicated that start-up costs increased 7.7 percent for each 10 percent increase in deposits. For ongoing costs, the measure of scale was the number of electronic transactions. The estimated scale coefficient was also significantly less than one.⁷⁹ Its size indicated that ongoing costs increased 4.3 percent for each 10 percent increase in the number of such transactions.

Costs for Regulation E may exhibit economies of scale because of indivisibilities in regulatory compliance. Several compliance activities discussed in an earlier subsection of this section seem to have this characteristic. For example, the software required to generate required disclosures generally cannot be divided. The bank buys the entire package, which it can then use to produce any number of disclosures. If the cost of the software is fixed, the average cost of disclosures will decrease as the number of disclosures increases. Another example of indivisibility is the time needed to learn the requirements of the regulation. Bank officers cannot afford to learn only part of the regulation's requirements, nor can employees be partly trained. Thus, a finding of economies of scale for Regulation E seems entirely reasonable.

⁷⁶ Schroeder, *Compliance Costs and Consumer Benefits*

⁷⁷ The amount of checking and savings deposits owned by individuals, partnerships, and corporations was a proxy for anticipated consumer demand for electronic fund transfer services. Because of the high growth rate for electronic fund transfer services at that time, Schroeder argued that anticipated demand was a better indicator of scale for start-up costs than was current volume.

⁷⁸ The *t*-statistic to test the hypothesis that the scale coefficient equals one is 2.52. Assuming a significance level of 0.01, this value leads one to reject the hypothesis that the scale coefficient is one.

⁷⁹ The *t*-statistic to test the hypothesis that the scale coefficient equals one is 5.30. Assuming a significance level of 0.01, this value leads one to reject the hypothesis that the scale coefficient is one.

C. Costs of Applying Regulation E Requirements to Electronic Stored-Value Products

Many of the activities required to implement Regulation E for deposit accounts would be required to implement similar rules for electronic stored-value products; the actual costs would depend on which specific provisions were made applicable to a stored-value product. Managers would have to learn the requirements of the regulation. If the product were already offered, managers would have to review the product and procedures and modify them to comply with the regulation. If the product were planned but not yet available, managers would have to consider how the regulatory requirements affect their plans. Managers would also have to design a compliance audit procedure. Ongoing costs of applying Regulation E requirements to electronic stored-value products would include managers' time spent monitoring employees' compliance and following changes in the regulation; legal expenses for interpreting changes in regulation, reviewing complaints, and litigation; and expenses for training employees to comply with regulatory requirements.

Unlike deposit accounts, many stored-value products have documentation, recordkeeping, and risk characteristics very different from those that relate to Regulation E. Electronic stored-value transactions are often substitutes for cash transactions, which provide little, if any, documentation or records and no protection against the loss of the instrument. Moreover, a deposit account usually implies a long-term relationship between the account holder and a financial institution. For many stored-value products, in contrast, the issuer may not know or care to know the identity of card holders, and the amount of stored value is probably exhausted over a period considerably less than a year.⁸⁰ As a consequence, if certain consumer protections designed for electronic transactions on deposit accounts are made applicable to stored-value products, the requirements could be more costly to implement for some stored-value products than for deposit accounts. Such consumer protections may also give rise to opportunity costs by prohibiting specific characteristics in stored-value products (e.g., products without protection for unauthorized use) or discouraging the introduction of some stored-value products because of the operating costs of producing Regulation E consumer protections. The remainder of this subsection discusses some cost considerations for providing specific Regulation E consumer protections for electronic stored-value products.

1. Receipt Requirements. If, as seems unlikely, Regulation E receipt requirements were to apply to all stored-value transactions, receipt printers would need to be installed in vending machines, parking meters, and other small-value, self-service machines. If installation of such printers was not technically or economically feasible, the requirement would preclude the use of

⁸⁰ Consumers may, of course, replace expired stored-value cards with another card or add value to a reloadable card. There is no long-term relationship between the consumer and issuer in many cases because the issuer has no interest in learning the identity of card holders and makes no effort to do so. Some issuers, however, may have an interest in offering an electronic stored-value product to their account holders.

stored-value products in such places. Printers for vending machines do not exist now. They would have to be designed. The technology for such printers is not new, but the design would have to be highly reliable because no retail clerk would be available to correct paper jams or other malfunctions. Thus, the cost of the printer might be high relative to the rest of the equipment. Vending machines that currently accept stored-value cards (which are found on some university campuses) would have to be refitted with such printers. Ongoing costs of requiring receipts would include additional power to operate the printer, paper to print the receipts, and labor to replenish the paper and repair occasional malfunctions of the printer. In places that the machines are used heavily or are subject to peak demands, the delay in transaction time from printing a receipt might discourage the use of machines accepting stored-value cards.

A receipt requirement would make it necessary to install printers or modify existing printers in transit system terminals. These printers would have to be highly reliable because customers would have to be processed quickly and because the terminals would be self-service in many cases. Thus, the cost of the printers is likely to be high relative to the rest of the terminal. The ongoing costs of requiring receipts in transit systems would be similar to those for vending machines. The delay in transaction time from printing a receipt would be a critical concern in transit systems.

In many face-to-face transactions, a receipt requirement may be less costly than in self-service or transit applications. Retailers that accept credit cards or debit cards would have terminals that are designed to produce receipts. Clerks would be available to conduct the transaction and operate the equipment, so that any additional service requirement from requiring receipts would be negligible. These retailers would also generally provide receipts, even for small transactions. Thus, extra transaction time would probably not be an issue.

In contrast, retailers such as newsstand operators, fast-food vendors, and some convenience shop owners—who typically have small transactions, accept only cash, and have short transaction times—might find compliance with a receipt requirement burdensome. They may not be accustomed to giving customers receipts. These retailers would have to purchase or lease terminals to accept payments from stored-value products, but the terminals may be more expensive because they contain printers. Ongoing costs of requiring receipts would include the power to operate the printer, paper to print the receipts, and labor to replenish the paper and repair occasional malfunctions of the printer. The delay in transaction time from printing a receipt may cause congestion in some cases and discourage adoption of stored-value products.

In other stored-value applications, a receipt requirement does not appear to present special problems. An “electronic travelers check” with PIN or signature protection might be used at automated teller machines, debit card terminals, or credit card terminals, which are

currently required to produce receipts.⁸¹ Internet stored–value products could provide receipts in electronic form.⁸²

2. Liability for Lost or Stolen Cards. For many of the electronic stored–value products intended to be used as cash substitutes, issuers do not now assume any liability for loss or unauthorized use of stored value. These products can be used by anyone possessing the product. There is no PIN, nor is there any other authorization requirement associated with use. In some cases, the record of stored value is maintained only on a device (e.g., a chip card) held by the consumer. Imposing Regulation E’s requirements that the issuer of the product assume liability in certain situations would make it necessary for issuers to alter the product. They would likely have to establish authorization procedures, record the names of authorized owners, and create a central database of records for transactions of individual owners.

Other stored–value products for which issuers also do not reimburse consumers for lost or stolen cards may maintain a central record of transactions as a fraud control measure. Issuers may not identify owners of cards or normally track use of individual stored–value cards. To comply with Regulation E’s liability requirements, these issuers would likely have to establish different authorization procedures (which determine the right to use the card as well as the validity of the card) and possibly record the names of authorized holders. The costs of Regulation E liability requirements would include start–up expenses for changing authorization procedures and ongoing expenses for losses from unauthorized use, maintaining records of owners of stored–value products, and in some cases maintaining records of transactions. Regulation E liability requirements might also give rise to opportunity costs by making electronic stored–value products unprofitable in some applications.

Issuers that do reimburse consumers for lost or stolen cards, similar to policies for travelers checks, probably would not incur compliance costs for changes in recordkeeping systems. They might incur compliance costs if Regulation E’s liability requirements were different from their choices in the absence of regulation. In particular, issuers using PINs to authorize use probably would not choose to incur liability when consumers wrote their PIN on access devices. Thus, these issuers might incur greater losses from unauthorized use under Regulation E than without regulation.

⁸¹. A travelers check is a sight draft for a fixed amount paid in advance and signed twice by the purchaser, once when ordering the draft and once when cashing it. Travelers checks are payable by the issuing company and insured against loss or theft. Many consumers use them because they are more secure than cash and more widely acceptable than checks. There is no generally accepted definition of an “electronic travelers check.” This study defines “electronic travelers check” as a product that is marketed as having features similar to those of the paper travelers check, such as immediate replacement by the issuer when the check is lost or stolen.

⁸². Regulation E currently does not require receipts for home terminals. Moreover, the Board has proposed amending Regulation E to allow electronic messages for required disclosures (61 FR 19696, May 2, 1996). This proposal may reduce the cost of receipt and other documentation requirements on accounts of customers who are able to receive electronic messages.

3. Error–Resolution Procedures. Electronic stored–value products may be subject to errors from malfunctioning terminals or stored–value devices, in debiting the amount of transactions at the point of sale, and in authorizing or refusing transactions. Stored–value products for which the issuer assumes no liability for unauthorized use may have more limited needs for error–resolution procedures than products for which the issuer assumes some liability for unauthorized use. Errors in debiting transactions would normally be resolved at the point of sale. The issuers’ main responsibility would be to replace defective cards and resolve errors caused by defective terminals.

Regulation E liability requirements would subject issuers to a greater number of potential errors because of the possibility of errors in identifying authorized users. Regulation E also specifies requirements for issuers’ error–resolution policies and mandates an annual notice of error–resolution procedures. Issuers of stored–value products would have to develop policies for error resolution that are consistent with the requirements of Regulation E. The likely increase in alleged errors attributable to liability issues would require additional employee time, data processing resources to determine debits against specific cards and ascertain the legitimacy of disputed debits, and possibly greater telephone capacity.

Issuers of stored–value products who are willing to replace lost or stolen cards would probably have to alter at least some parts of their error–resolution policies. They would have start–up costs for learning the regulation’s error–resolution requirements, reviewing and altering existing or planned procedures, training employees, and notifying customers of the new procedures. They might incur ongoing costs if the required error–resolution procedures were more costly to use than issuers’ preferred procedures.

4. Periodic Statements. Most existing or planned electronic stored–value products do not provide periodic statements. The recordkeeping needs for this Regulation E requirement would be greater than those for the liability requirement for unauthorized use. Issuers would have to maintain records of the addresses of owners in addition to records of remaining stored value and ownership. In some cases, issuers would have to send only one periodic statement because the stored value would be exhausted before the first periodic statement. In many other cases, two or more periodic statements would have to be sent. Maintaining current addresses would probably not be an issue for the vast majority of customers because of the short–term nature of most stored–value products. Finding a current address might be a problem for a small number of customers who move before exhausting the stored value. Owners of stored–value cards might not have much incentive to inform the issuer of new addresses, and locating these customers might be expensive. If the regulation did not allow returns of periodic statements for customers that could not be located, issuers would have to limit the time for which stored–value products were valid.

Probably the vast majority of issuers of stored–value products would not send periodic statements in the absence of regulation. Even those issuers that are capable of sending periodic statements (such as some that issue products for which they assume liability for unauthorized use) might provide periodic statements only if requested to do so by the customer. Thus, the periodic statement would be a new document, not an addendum to an existing document. Virtually all of the cost of the paper and postage would likely be an incremental cost. Issuers of these products might also incur start–up and ongoing costs for increasing and maintaining the capacity to produce the greater number of periodic statements that the regulation might require.

5. Notification of Changes in Terms and Annual Error–Resolution Notice. Regulation E requires that issuers of electronic fund transfer products notify customers in writing of changes in terms and send at least annually a notice describing error–resolution procedures. The recordkeeping needs for these requirements would be similar to those for the liability and periodic statement requirements. Because changes in terms would probably be infrequent and many stored–value products would not be outstanding for longer than a year, few notices would likely be sent. Those that would be sent would most likely not be sent in the absence of regulation, so that the cost of sending them would be incremental.

Some issuers of electronic stored–value products probably would want to offer that product as part of an ongoing banking relationship. These issuers would not necessarily inform customers of changes in terms by sending written notices, but most would likely send notices because they were accustomed to using written notices to inform customers of changes in terms for most retail bank products.⁸³ The cost of sending notices would not be incremental in such cases, although these institutions might incur some costs from this requirement because of the need to send notices exactly as prescribed by the regulation.

6. Initial Disclosures. Initial disclosures required under Regulation E are substantial and in many cases probably could not be printed on the stored–value device. Separate disclosures would likely be required. Issuers of some stored–value products routinely package brochures with the devices. The cost of providing these disclosures would not be incremental costs, although there might be start–up costs if the disclosures were not in compliance with Regulation E.⁸⁴ Issuers of other stored–value products may provide some information on the stored–value device (e.g., issuers of some transit fare cards). The cost of separate Regulation E disclosures would be an incremental cost in the latter case. However, it is unlikely that all the

⁸³ The Truth in Savings, Truth in Lending, Electronic Fund Transfer, and Expedited Funds Availability acts require institutions to send customers written notices for changes in terms in specified circumstances.

⁸⁴ Disclosures of terms often contain marketing information. Therefore, only part of the cost of the brochures may be attributable to the regulation. After the passage of time, however, consumers may become familiar with the terms of the product. The marketing information becomes unnecessary to promote the product, making the full cost of the brochure an incremental cost.

initial disclosures required under Regulation E would be applicable to all stored–value products because of the nature of the products.

D. Timing Issues

There is little evidence of consumer problems with electronic stored–value products at this time. Experience is quite limited, however. It is impossible to predict with much certainty whether or not problems will arise as these products become more widely used.

Whether regulation is likely to be needed and possible alternatives to regulation are addressed in the next section. The remainder of this section considers the way the timing of regulation may affect regulatory cost. More specifically, are regulatory costs likely to be greater for a new product than for a mature product?

The principal argument for early regulation is that providers of new products will know from the beginning that the products are regulated and what the regulation requires. With this knowledge, producers can take regulatory requirements into account when designing the product; they avoid the costs of designing a product first and then later having to change the product to comply with the regulation. Early regulation may also address consumers’ concerns about a product and, by resolving their uncertainty, hasten acceptance of a new product.

The main arguments for waiting are that it is not known what (if any) problems will occur, regulators cannot foresee how new products will develop, and economies of scale make regulatory compliance more costly for new products (for which output is relatively low) than for mature products. Regulation of new products may also have greater opportunity costs. Lacking insight on how the market for a new product will develop, regulators may prescribe costly requirements for problems that would not occur or mandate features that preclude products that consumers would value.

Available evidence suggests that there are economies of scale in regulatory compliance. As discussed above, Schroeder’s analysis finds economies of scale for both start–up and ongoing costs for Regulation E. Economies of scale have been found for other bank regulations as well.⁸⁵ The economies of scale seem to arise because of indivisibilities in many compliance activities. Managers’ time learning regulatory requirements and designing compliance procedures or data processing costs for programming or the purchase of software to make required disclosures are examples of start–up costs that may have a large fixed component. The cost of a compliance officer or department is an example of an ongoing incremental cost that may have a large fixed component. Applying Regulation E requirements to electronic stored–value products would not entail the same compliance costs that Regulation E did almost

⁸⁵ Gregory Elliehausen, “The Cost of Bank Regulation: A Review of the Evidence,” working paper (Board of Governors of the Federal Reserve System, Office of the Secretary, Regulatory Planning and Review Section, 1997).

two decades ago. Nevertheless, it is highly likely that indivisibilities in the use of factor inputs would cause economies of scale in regulatory costs for stored–value products.

It seems unlikely that regulators will perfectly foresee how markets for new products will develop and write a regulation for new products that would not need some later revision. Evidence on the cost of complying with changes in regulations is scarce. Boyle found that the cost of a major revision of the Truth in Lending regulation was substantial, about half the cost of the original regulation.⁸⁶ Elliehausen and Lowrey investigated the sensitivity of start–up costs to the amount of change in bank procedures necessary to comply with a new regulation (Truth in Savings).⁸⁷ The statistical analysis suggested that start–up costs are insensitive to the amount of change. Elliehausen and Lowrey offered several possible explanations. Activities such as learning the requirements of a regulation, evaluating existing disclosures and procedures, formulating policies to ensure compliance, training employees, and assessing how the regulation affects the bank’s position in the market would have had to be performed even if no changes were required. Other activities, such as designing new disclosures, revising procedures, and destroying obsolete forms, might not be completely fixed, but they likely would have substantial indivisible components, making their cost largely fixed once any change had to be made. These considerations suggest that costs of complying with later revisions may reduce any savings in operating costs from imposing a regulation early in the product life cycle.

E. Summary

Producers of electronic fund transfer features on deposit accounts reported significant start–up and ongoing incremental costs in complying with Regulation E. Providers of electronic stored–value products would likely experience similar start–up and ongoing incremental costs if comparable Regulation E requirements were made applicable. In addition, Regulation E requirements for stored–value products would probably give rise to opportunity costs because they would preclude offering some characteristics on stored–value products or make offering them more expensive. Early regulation of electronic stored–value products may cause higher regulatory costs than later regulation (if regulation ultimately is determined to be desirable) because of economies of scale, the cost of revising regulations, and possible opportunity costs.

⁸⁶ John M. Boyle, “A Survey of the Mortgage Banking Industry Concerning the Costs and Benefits of Regulation,” report prepared for the Federal Trade Commission (Louis Harris and Associates, 1982).

⁸⁷ Gregory Elliehausen and Barbara R. Lowrey, “The Cost of Implementing Truth in Savings: An Analysis of the Truth in Savings Experience,” working paper (Board of Governors of the Federal Reserve System, Office of the Secretary, Regulatory Planning and Review Section, 1994).

VI. Alternative Approaches to Regulating Electronic Stored-Value Products

Electronic stored-value products are an emerging technology. Existing and planned products are highly varied in their features and anticipated uses. The spectrum of products and product features is still evolving, and future products may differ significantly from those available in the marketplace today.

As discussed in section V, full application of Regulation E to electronic stored-value products would likely impose significant operating and opportunity costs on product providers and have implications for the types of products that evolve. This section considers alternatives to full application, including limited application of Regulation E, reliance on the existing legal framework and market incentives in place of the regulation, government-initiated consumer protection alternatives to the regulation, and new federal or state legislation. In considering these alternatives, one should recognize, as noted in section III, that “stored-value” is not a well-defined term and that drawing a clear legal distinction between some debit-like stored-value products and debit cards that are currently subject to all provisions of Regulation E may be quite difficult. Regardless of the regulatory approach adopted, legislators or regulators will need to draw this distinction. Before discussing alternatives to the full application of Regulation E to stored-value products, this section discusses the general scope of the Electronic Fund Transfer Act as it relates to electronic stored-value products.

A. Application of Regulation E to Electronic Stored-Value Products

Coverage of electronic payment transactions under the Electronic Fund Transfer Act depends on whether a transaction involves an electronic fund transfer to or from an account.⁸⁸ The act defines an account as a demand deposit, savings, or other asset account described in Board regulations, established for personal, family, or household purposes. Thus, accounts under the Electronic Fund Transfer Act and Regulation E are not limited to traditional checking and other deposit accounts. For example, the term includes a consumer’s money market mutual fund or other securities accounts held by a broker-dealer, as well as funds in government-established accounts for the benefit of recipients of certain entitlements.⁸⁹

The legislative history of the act notes that the definition of “account” (as well as the definition of “financial institution”) subject to the act is deliberately broad to ensure that all persons who offer equivalent electronic transfer services involving any type of asset account are

⁸⁸. An electronic fund transfer is defined as “any transfer of funds, other than a transaction originated by check, draft, or similar paper instrument, which is initiated through an electronic terminal, telephonic instrument, or computer or magnetic tape so as to order, instruct, or authorize a financial institution to debit or credit an account.” 15 U.S.C. § 1693a(6).

⁸⁹. Under current law, needs-tested electronic benefit transfer programs administered by state or local governments are exempt from Regulation E.

subject to the same standards and that consumers owning such accounts are assured of uniform protection.⁹⁰ Nevertheless, the types of accounts explicitly enumerated in the act, such as demand deposit and savings accounts, share several specific features. For example, these accounts are traditionally used for holding funds for personal, family, or household purposes.⁹¹ They involve a formal, continuing relationship with a financial institution in which the financial institution generally records the funds in the name of a particular consumer and identifies that consumer additionally through a home address, a signature card, and, in some cases, other forms of identification. Consumers can generally use these accounts to receive funds from a variety of sources, including wages, government benefits, and investment income. In some cases (e.g., checking accounts), the accounts are typically used to make payments to a wide range of payees through a number of means, including checks, teller and ATM cash withdrawals, point-of-sale (debit card) payments, and preauthorized ACH transfers; in other cases (e.g., savings accounts), access may be more limited (some accounts may allow only electronic credits, not debits).

Many electronic stored-value products would not access traditional checking or savings accounts or involve a formal relationship with a financial institution. Some could be used only at specific locations or for specific goods or services.

The Board was given authority to extend rules when necessary to cover new EFT services. In discussing section 904(c) of the Electronic Fund Transfer Act, Senate Banking Committee reports on two separate bills state that “since no one can foresee EFT development in the future, regulations would keep pace with new services and assure that the act’s basic protection continue to apply.” Under section 904(c), the Board is authorized to implement rules extending coverage of the Electronic Fund Transfer Act to new EFT services and to provide for adjustments and exceptions that are necessary or proper to effectuate the act’s purposes and facilitate compliance. Accordingly, the Board has, from time-to-time, made modifications and exceptions to accommodate new EFT services.⁹²

To determine whether the protections of the Electronic Fund Transfer Act should apply to stored-value services, the Board must first determine which products would be covered by the act. As discussed in section III, the term “stored-value” refers to a broad spectrum of new

⁹⁰. A “financial institution” means “a State or National bank . . . or any other person who, directly or indirectly, holds an account belonging to a consumer.” 15 U.S.C. § 1693a(8). Thus, the term is not limited to a traditional depository institution.

⁹¹. Certain temporary or specialized accounts, such as escrow accounts or occasional credit balances in a credit card account, are not considered to meet the definition of a consumer asset account.

⁹². For example, Regulation E requires that a receipt be made available to a consumer at an electronic terminal, defined as “an electronic device, other than a telephone operated by a consumer, through which a consumer may initiate an electronic fund transfer.” This definition could be interpreted to include personal computers, which are not necessarily equipped with printers. To avoid undue compliance burdens, the Board added an interpretation to the Staff Commentary on Regulation E stating that an electronic terminal does not include equipment analogous to a telephone (for example, a personal computer).

payment products. The language of the statute and the legislative history indicate that the scope of the Electronic Fund Transfer Act clearly is broad enough to cover certain stored-value products and other new electronic payment systems (i.e., those that involve EFTs from consumer asset accounts) should the Board conclude that applying Regulation E to them is appropriate. However, the act may not be broad enough to cover other products.

At one end of the spectrum are stored-value products—certain mass transit farecards, for example—where the holder prepays for a particular product or service and the card holds the only record of the consumer’s funds. It would be a broad construction of the term “asset account” to characterize these products as involving electronic fund transfers from *asset accounts* held on behalf of a consumer by a financial institution.

At the other end of the spectrum are stored-value products that have characteristics much like traditional debit cards. For example, a stored-value card might provide the user with access to funds maintained by a financial institution under an arrangement that resembles a consumer asset account subject to the Electronic Fund Transfer Act.

Although some electronic stored-value products are difficult to distinguish from a traditional debit card and arguably are subject to coverage under the Electronic Fund Transfer Act, the application of certain provisions of the act to these products could impose substantial compliance costs and adversely affect the advancement of this new technology. Therefore, modifications to the act’s requirements, pursuant to section 904(c) of the Electronic Fund Transfer Act, may be appropriate. In determining the extent to which stored-value products should be subject to the requirements of the Electronic Fund Transfer Act, the Board must consider the costs and benefits of regulating new payment products. Section 904(a) of the act directs the Board to balance consumer protections with the compliance costs necessary to achieve those protections, and the Congress has directed the Board to evaluate whether provisions of the act could be applied to these products without adversely affecting their cost, development, and operation.

B. Limited Application of Regulation E

As discussed in section V of this report, full application of Regulation E to electronic stored-value products would probably give rise to prohibitive costs. The costs could be reduced by the selective imposition of the provisions of Regulation E. An economic analysis of several regulatory alternatives involving partial application of Regulation E to stored-value products is considered below. Under all of these approaches, regulating certain stored-value products under the Electronic Fund Transfer Act may be subject to legal constraints.

1. Requiring Initial Disclosures. One alternative to full application of Regulation E is to require only disclosure of information at the time a stored-value product is purchased or

obtained. Such a requirement could be quite specific, and detail those items that must be disclosed, or it could be a general mandate for the provision of information about key product characteristics in a form that consumers can readily understand. According to economic theory, the availability of information is a prerequisite for rational decisionmaking and efficient market outcomes. Moreover, requiring disclosure of information would not generally give rise to significant opportunity costs, which often occur when the terms of a product are regulated. For these reasons, it is useful to consider separately the potential benefits and costs of initial disclosure requirements, such as those contained in Regulation E.

The Electronic Fund Transfer Act requires that financial institutions disclose certain terms of electronic fund transfer features used in conjunction with consumer asset accounts, when a consumer initially agrees to use the feature. The terms that must be disclosed include the consumer's liability for unauthorized transfers, error-resolution procedures, any limits on the frequency or dollar amount of transfers, and any fees or charges for individual transfers or for the service. Any or all of these terms could apply to electronic stored-value products, although some may be less relevant than they are for traditional accounts.

Provision of initial disclosures of the features of these new services may be useful to consumers. Providers of stored-value products may choose to disclose certain information voluntarily, thereby limiting both the incremental value and the incremental cost of mandatory disclosures. In some cases, disclosures emphasize a particular term (e.g., protection against lost or stolen cards) to assist in the marketing of the product. In many cases, the disclosures may be prompted by a desire to enhance the enforceability of contract provisions.

Voluntary disclosures may vary considerably across both products and providers. Such variation may be desirable to the extent that it reflects variations in the products themselves; however, it may increase the difficulty that consumers face in making cross-product comparisons. In some cases, voluntary disclosures may be less complete than those that would be mandated by the government. Although incomplete disclosures might make it more difficult for consumers to obtain important or useful information, mandating extensive disclosures could lead to the provision of unnecessary or confusing information.⁹³ In addition, the government may have difficulty determining which information is most useful to consumers and how best to present that information.

Regulation E disclosure requirements could be imposed on electronic stored-value products, ensuring that all consumers would receive initial disclosure of certain terms of the agreement. The disclosures would probably be fairly uniform because many providers of stored-value products would elect to use model forms to ensure compliance. The imposition of

⁹³ See Lynne B. Barr, "Stored Value Cards: Emerging Disclosure Standards," *Electronic Banking Law and Commerce Report*, volume 1, no. 7 (January 1997), pp. 2-5.

Regulation E's initial disclosure requirements could entail significant operating costs for some providers of electronic stored-value products, which might vary considerably across products and providers. These costs would include start-up costs for learning the disclosure requirements, designing or modifying initial disclosures to comply with the regulation, and establishing procedures to ensure compliance. Ongoing costs would include costs for distribution of any initial disclosure material (such as separate brochures) that would not have been distributed in the absence of regulation and costs for implementation of the procedures for ensuring compliance.

While compliance with initial disclosure requirements might entail significant operating costs for many providers of stored-value products, it generally would not give rise to significant opportunity costs. Providers who choose to offer protections such as limited consumer liability for lost or stolen cards would disclose that information. Providers who choose to let the consumer bear the risk of lost or stolen cards would disclose accordingly. Consumers could compare products and choose the product that best meets their needs. There would be no regulatory requirement to provide specific consumer protections or any particular product characteristics, but merely to disclose the presence or absence of these protections.

2. Requiring Provisions Selectively. Regulation E has a number of requirements, which if applied to electronic stored-value products would affect the documentation, record-keeping, or risk characteristics of the products. At least three basic approaches to applying Regulation E requirements to electronic stored-value products exist: (i) uniform application of selected Regulation E provisions to all stored-value products, (ii) variable application of selected Regulation E provisions on the basis of product usage or characteristics, and (iii) variable application of selected Regulation E provisions on the basis of the underlying technology's ability to comply with regulatory requirements. This subsection discusses the potential economic consequences of implementing each approach under the legal framework provided by the Electronic Fund Transfer Act.

Uniform application of selected Regulation E provisions to all stored-value products would mandate that all issuers provide specified documentation, recordkeeping, or liability limitations of each stored-value product. A rationale for this approach is the belief that without such requirements consumers would face unreasonably great potential harm. For example, one argument is that consumers should not bear full liability for unauthorized use of stored-value cards or that they need receipts for transactions involving stored-value cards to be able to correct errors.⁹⁴ In the absence of much experience with electronic stored-value products, however,

⁹⁴ See, for example, Letter, Ruth Susswein, Executive Director of Bankcard Holders of America, to William W. Wiles, August 6, 1996; Letter, Janice C. Shields, Consumer Research Director of U.S. Public Interest Research Group, to William W. Wiles, August 6, 1996.

judging the extent of potential harm to consumers for any existing or proposed electronic stored-value products is difficult.

This approach would give rise to opportunity costs. It would prohibit products from having less-than-specified levels of certain characteristics and would raise the costs of providing products that were not intended to have those characteristics. For example, a requirement that providers of stored-value products limit a consumer's liability for unauthorized use to a specified dollar amount would necessitate authorization procedures, which might preclude the use of stored-value products in applications in which transaction speed was a critical factor. To the extent that these costs were passed on to consumers through transaction or other fees, they might discourage consumers from using stored-value products in certain situations. Only if consumers would not have chosen products with less than the mandated levels of characteristics would there be no opportunity costs arising from this approach to regulation.

The cost of complying with Regulation E's documentation, recordkeeping, and other requirements might inhibit the development of electronic stored-value products for making small cash payments. The initial and ongoing costs of satisfying regulatory requirements could cause the cost of a stored-value transaction to approach that of a debit card transaction. Under such circumstances, there might not be much incentive to develop a stored-value product for this purpose.

The second approach for applying Regulation E provisions selectively is to regulate stored-value products according to their usage or characteristics. Under this approach, for example, because a key feature of travelers checks is protection against lost or stolen checks, "electronic travelers checks" might be subject to regulatory requirements governing this feature. In contrast, electronic stored-value products to be used in vending machines or for transportation services might not offer such protection and therefore would not be subject to any regulatory requirements governing unauthorized use. This approach would allow the development of a variety of electronic stored-value products with potentially distinct product characteristics. Consumer protection under this approach might be more useful to consumers than under the first approach because the specific protections required would be tailored to the characteristics of each category of products. At this early stage in the development of stored-value products, however, it is not clear what categories of products will gain market acceptance or whether any market failures will occur that Regulation E's consumer protections might remedy.

This approach could give rise to substantially lower opportunity costs than the first because it attempts to recognize different categories of stored-value products. Nonetheless, there would likely be some opportunity costs. To implement this approach, regulators would have to define different categories of products by their characteristics. The regulatory definitions would be subjective and possibly ambiguous. Providers of electronic stored-value products

would have to design products to satisfy regulatory definitions as well as consumer demand.⁹⁵ Thus, regulatory constraints on product design would produce products that would be different from those that would be produced in the absence of regulation. It is also possible that the existence of regulatory constraints on product design would inhibit the development of new uses for electronic stored-value products.

Regulatory requirements for each category of product would give rise to operating costs for regulatory compliance. Start-up costs for a new product include managerial and legal expenses for determining that the product satisfies the appropriate regulatory definition. Ongoing costs would be incurred to meet the specific requirements applicable to the product category. Although the regulatory requirements would be designed specifically for that category of products, producers would probably incur some incremental costs in complying with the regulation because they would not voluntarily choose the precise product characteristics required by the regulation. Furthermore, producers would incur incremental costs to insure that they are in compliance at all times.

The third approach is to regulate electronic stored-value products on the basis of each products' ability to provide consumer protections. This approach essentially ties requirements for documentation, recordkeeping, or liability limitations to the technology used in providing the stored-value product. Thus, products that maintain records centrally might have the capability of meeting these requirements and therefore might be obligated to do so. Products that used a technology that does not maintain records centrally (i.e., ones that maintain a record of value only on a device in the possession of the consumer) might not be able to provide these protections. Under this approach for applying Regulation E provisions selectively, providers of such products would not be subject to any documentation, recordkeeping, or liability limitation requirements. A potential problem with this approach is that subtle differences among products might affect the costs or even the feasibility of satisfying regulatory requirements.

Although product characteristics and the underlying technology tend to be closely related, the correspondence between them is not one-to-one. Thus, this regulatory approach would often, but not always, lead to requirements that were consistent with product characteristics. Providers might choose a technology involving central records and on-line authorization because they intended to provide stored-value products with documentation or security features. Imposing regulatory requirements that are consistent with the capabilities of the production technology might make the ongoing incremental cost of regulation relatively low.

A potential problem with regulating by technology is that, in the absence of such regulation a provider might choose to produce a product that does not have all of the consumer

⁹⁵ Satisfying regulatory definitions might involve choosing product designs that are subject to less regulation or that even avoid regulation altogether.

protection characteristics that the technology is capable of providing. A provider might use a particular technology (e.g., central data collection) for a stored-value product because an infrastructure already exists (e.g., the existing network of terminals can be used) or because the technology provides a characteristic not related to consumer protection (e.g., fraud prevention). If the provider were unwilling to provide certain consumer protections (perhaps because a product that meets all regulatory requirements did not fit into its business plan), the provider might be forced to use a more expensive technology or might decide not to offer an electronic stored-value product. If the provider chose to offer the consumer protections required for its preferred technology, it would incur compliance costs that would not be borne by its competitors that chose less-regulated technologies. Thus, variable application of Regulation E's requirements on the basis of technological capability could influence providers' choices of products and technologies.

3. *Exempting Selected Stored-Value Products.* Some types of electronic-stored value products have special characteristics that might mitigate concerns about the potential harm to consumers resulting from their use. Exempting such products from regulation might be appropriate. One possible exemption would be for stored-value products that limit the maximum amount of stored-value to a specified dollar amount. To provide flexibility over time, indexing the exemption level to reflect price level changes might be appropriate. Providers might set limits on stored-value to avoid regulation, especially providers of products that are intended to be used primarily for small-value transactions. Customers of providers that set low limits to avoid regulation would incur greater transaction costs because of the need to reload or purchase new stored-value devices frequently. Transaction costs would include inconvenience and perhaps greater transaction fees and might limit a product's appeal. If the exemption limit were very low, it might be impractical for many providers of stored-value products to avoid regulation. If the exemption limit on stored-value were high, a relatively large number of providers of stored-value products would be likely to take advantage of the exemption.

Another possible exemption would be for closed systems, such as many of the stored-value programs at colleges, private companies, resorts, and sports arenas, which are systems in which the stored-value product is available to only a narrowly defined group of users in a limited area. One argument is that there is little need for consumer protections in a closed system because the relationship between the issuer and user is close or long term. This argument is not entirely convincing. For example, relationships between resorts or sports arenas and their customers are not necessarily close or long-term. Moreover, regulators may face constant pressure to relax the criteria for defining a closed system, much as they do regarding the criteria for defining a common bond for credit unions.

Single-purpose stored-value products such as transit farecards and phone cards have also been mentioned as candidates for exemption. One rationale for such an exemption is that these products constitute prepayment for a particular product or service rather than a substitute for cash or other payment alternative that can be used to purchase a wide variety of goods and services. It may be difficult, however, to draw meaningful distinctions between single-purpose electronic stored-value products and electronic stored-value products that can be used to purchase a variety of goods and services from a single seller or a limited group of sellers. As mentioned above, the pressure to extend the exemption to cover an increasingly large group of products may be significant.

C. Alternatives to the Application of Regulation E

Alternatives to the application of Regulation E to electronic stored-value products include (i) relying on the existing legal framework and market incentives in place of regulation, (ii) relying on government-issued policy statements, (iii) developing government-sponsored consumer education programs, and (iv) passing new federal or state legislation.

1. Relying on Existing Legal Framework and Market Incentives. One alternative to the application of Regulation E to stored-value products is to rely on the existing legal framework and market incentives to provide protection for consumers.

a. Applicability of existing legal framework to stored-value products. The existing legal framework consists primarily of principles of the common law of contracts and product liability, laws governing negotiable instruments, and various state money transmitter laws.

Principles of the common law of contract would apply to electronic stored-value products as well as other payment instruments. Disclosure of terms is critical to the formation of a legally enforceable contract. Generally, a court will not enforce a contract between two parties if it finds that there was no “meeting of the minds” on a particular contract or contract term. For example, a consumer might not be held liable under terms, such as liability for unauthorized use or usage fees, imposed by a stored-value provider that were not disclosed before the issuance of the product.⁹⁶ Issuers, therefore, have a strong incentive to disclose important features of stored-value products. Terms that are not disclosed may not be considered part of the contract and likely would be unenforceable.

Even if all terms are disclosed, a court could find that excessive fees or liability placed on consumers are unenforceable if they are unconscionable. Usually when a court finds that a contract is unconscionable, one party is in a position of economic advantage over the other. With stored-value products, consumers retain the right simply to refrain from purchasing the product. An issue of whether a contract was established may remain, however, if the so-called

⁹⁶ Some of the disclosures required by Regulation E might be required under contract law principles.

unconscionable terms are not adequately disclosed. A court could also void a contract that is contrary to law or public policy.

In the absence of a contract governing an electronic stored-value product, a court would likely rely on principles of fairness, equity, and efficiency in apportioning liability. A court might place liability on the party best able to avoid the loss or apportion liability based on the relative negligence of the parties. For example, under these principles, a court would likely find that the party responsible for maintaining a stored-value card terminal would be liable for any losses to a consumer caused by the malfunction of that terminal. A court might also find that a card issuer had a duty to the consumer to provide sufficient disclosures and properly functioning products under a product liability theory.

Other legal regimes exist that are more narrowly targeted to specific types of payment instruments. Electronic stored-value products may not fit precisely into these existing regimes. For example, the law governing negotiable instruments is well established in the United States. Negotiable instruments are governed primarily by the U.C.C., which has been adopted fairly uniformly in every state. The U.C.C. (articles 3 and 4) establishes the rights, duties, and liabilities of parties to a negotiable instrument, including provisions governing transfers, warranties, and finality of payment.

Under the U.C.C., a negotiable instrument is an unconditional promise to pay, or order to another party to pay, a fixed amount of money either on demand or at a definite time.⁹⁷ Examples of negotiable instruments include personal checks, cashier's checks, notes, drafts, and certificates of deposit. The promise to pay associated with an electronic stored-value product may be subject to conditions set forth in the product contract and therefore may not meet the definition of negotiable instrument. Even if such a product is unconditional, it may not qualify as a "promise" or "order" because both of those terms are defined as "writings," which generally must be reduced to tangible form.⁹⁸ In certain jurisdictions, however, if an electronic signature is used to transmit a stored-value transaction, the stored-value product may be viewed as a negotiable instrument because the use of the digital signature creates a writing. At least three states have enacted statutes recognizing the validity of digital signatures in commercial settings.⁹⁹

Besides negotiable instruments, the U.C.C. (article 4A) governs fund transfers that are carried out through a series of payment orders. A payment order is an unconditional instruction of a sender to a receiving bank to pay, or cause another bank to pay, money to a beneficiary, provided that the receiving bank is reimbursed by debiting the sender's account or otherwise

⁹⁷. See U.C.C. § 3-104.

⁹⁸. U.C.C. § 3-103.

⁹⁹. Florida's Electronic Signature Act of 1996 [Fla. Stat. Ann. § 1.01(4)], Utah's Digital Signature Act [Utah Code Ann. § 46-3-102 *et seq.*], and Washington's Electronic Authentication Act [Wash. Rev. Code title 19].

receiving payment from the sender. Most stored–value products currently in development, however, are not designed to qualify as fund transfers under article 4A, as they are not initiated by an instruction by the payor to the payor’s bank to pay the beneficiary.

Nonbank businesses that sell travelers checks, money orders, and similar instruments are subject to money transmitter laws in forty–four states. A court might apply the law governing these instruments to the transfer of stored value. State money–transmitter laws generally require that the business obtain a license from the state and post a bond to protect the public from a default. These laws often require that the business maintain specific highly rated investments in the amount of all outstanding payment instruments.

In summary, although electronic stored–value products do not fit neatly into existing state legal regimes governing specific types of payment instruments, they would likely be covered by long–established common law principles governing contracts and product liability as well as by general fairness, equity, and efficiency principles. The general applicability of contract law and other common law principles to electronic stored–value products creates incentives for issuers to establish reasonable rules regarding rights and responsibilities of the parties and to provide sufficient information to consumers to describe these rules. However, if a consumer wishes to challenge the actions of an issuer under common law principles, the litigation may be time–consuming and the consumer will probably incur the costs of litigation.

b. Market incentives for providers to offer consumer protections. In a market economy, firms have strong incentives to develop new products with characteristics that consumers value. New products or technologies can range from minor modifications of existing products to entirely new ways of satisfying consumers’ needs. Electronic stored–value products fall somewhere in the middle of this spectrum: The technology is similar in many respects to that associated with credit cards and debit cards, but the product is often used as a substitute for cash in small–value transactions.

To achieve widespread acceptance in the marketplace, providers of electronic stored–value products must demonstrate that this new technology compares favorably with existing payment alternatives. The fact that consumers’ payment habits are well entrenched and slow to change creates a substantial barrier to the introduction of any new payment product. To overcome this barrier, providers will need to offer stored–value products with characteristics that are superior to those of existing products and will need to communicate their advantages to consumers and allay concerns that consumers may have about using this new technology.

By their nature, electronic stored–value products raise a number of consumer concerns. First, they are an unfamiliar way of carrying out small–value transactions. Second, the technology that deducts value from the consumer’s card is “invisible,” and its reliability is not immediately evident. Third, the question arises as to whether merchants will accept

stored-value products as a method of payment. Fourth, the differences between electronic stored-value cards and other card-based payment technologies may be difficult to understand.

To induce consumers to use these products, providers must address each of these concerns. They can help consumers to learn about and become comfortable with the products through advertising, promotional campaigns, demonstration projects, and consumer education programs. They can raise consumer confidence by providing a means for consumers to check the outstanding balances on their cards. For example, the residual value is printed on some public transit farecards after each transaction. Providers can establish procedures for handling lost or stolen cards and system failures. The treatment of lost or stolen cards can range from no protection to a commitment to replace the entire balance remaining on the card. Providers can write contracts, or provide information in other ways, that clearly specify the rights and responsibilities of the parties involved. Providers can design products with safety and security features that respond to consumers' demands. For example, in some applications (e.g., electronic substitutes for travelers checks) consumers may prefer security features such as documentation of transactions through receipts or transaction records, explicit procedures for error resolution, and protection against unauthorized use; but in other applications (such as public transit farecards), some or all of these security features may be viewed as unnecessary or even detrimental. Products with all these features are currently being offered or developed by at least some firms. If firms fail to take such measures, consumers can reject their products and continue to rely upon existing payment alternatives.

As discussed in section II of this report, government intervention may be appropriate when a problem of market failure exists. Among the sources of market failure described previously, the ones most relevant here are imperfect information and externalities. Imperfect information provides the justification for most consumer protection legislation or regulation in the financial services sector. Occasionally, the provision of information, particularly in a standardized form, generates positive externalities.

Imperfect information warrants government intervention in financial markets when providers have an incentive to provide insufficient or misleading information about a relevant or important term, consumers cannot easily verify the accuracy of information provided, and significant harm may be caused by the lack of accurate information. The provider of a stored-value product must undertake substantial investment in product development and system infrastructure to offer a viable payment alternative. It must also spend significant sums on marketing its product and may need to persuade merchants to incur nontrivial expenses to acquire terminals or other equipment for processing transactions.¹⁰⁰ To earn a reasonable rate of

¹⁰⁰. For a discussion of the cost of smart card terminals, see Melanie Rigney, "A Tame Market for Smart Card Terminals," *Credit Card Management*, January 1997.

return on these investments, a provider must convince merchants to accept its product and consumers to purchase and use the product repeatedly. If a provider misleads or fails to inform customers about critical product characteristics, customers will quickly discover the problem and will not use the product again. Thus, for many stored-value products, providers do not appear to have the incentive or the opportunity to impose significant harm on consumers by giving inaccurate or incomplete information. However, in situations where consumers are required (by an employer, a school, or the government, for example) to participate in a stored-value program or with certain products for which the value stored is substantial, the potential for harm may be significantly greater.

Although the market provides incentives for firms to offer product features and information that consumers value, benefits (positive externalities) can be associated with coordination among firms to standardize some features or information. Such standardization can make comparing and evaluating alternative products easier for consumers. In some cases market forces are sufficient to induce standardization, but in other cases government intervention may be required to facilitate interfirm agreements. Even if market forces are insufficient to induce firms to provide adequate protections, the possibility that government might impose consumer protection regulations could lead industry participants to establish and enforce their own standards. For example, the securities industry has a long history of self-regulation. The New York Stock Exchange, which was established 140 years before the enactment of the Securities Exchange Act of 1934, developed its own set of rules for members to follow, including sanctions for those members who did not comply with the rules.¹⁰¹ Self-regulation continues to play an important role in the securities industry. More generally, product standard and certification programs that exist throughout the private sector are routinely relied upon by consumers, firms, and government entities to provide information about product attributes and to discourage fraud and other undesirable activities.¹⁰² For an emerging technology such as stored-value cards, it is unclear whether some degree of standardization in the provision of consumer protection is desirable, and if it is desirable whether the market will provide it.

To overcome well-entrenched consumer payment habits, providers of stored-value products will have to create attractive products that meet some demands better than current payment technologies. Providers must inform consumers that the products exist, explain how the products differ from other products, and describe how the products are used. The market incentive to provide such information reinforces the legal incentives for disclosing information

¹⁰¹. See Nasser Arshadi and Thomas H. Eysell, *The Law and Finance of Corporate Insider Trading: Theory and Evidence* (Boston: Kluwer Academic Publishers, 1993).

¹⁰². See James C. Miller III, "The FTC and Voluntary Standards: Maximizing the Net Benefits of Self-Regulation," *Cato Journal*, vol. 4 (Winter 1985), pp. 897-903.

discussed earlier. Many of the existing stored-value products examined in the process of preparing this study provide such information in brochures, on the device itself, or both.

2. *Government Consumer-Protection Alternatives to Regulation.* Federal bank regulatory agencies have sometimes used policy statements and education programs to address consumer protection concerns in the absence of legislation or regulatory rulemaking. For providers of electronic stored-value products, a policy statement or education program could offer solutions that are less costly, less burdensome, and more flexible than mandatory rules to address some concerns about consumers' rights, liabilities, and responsibilities when using these products. How effective these alternative approaches alone would be depends on a number of factors. The effectiveness of policy statements may depend on whether specific guidance or general guidance is provided, to what extent industry is compliant, and the way that compliance is monitored. The effectiveness of a consumer education program may depend on what and how much information is provided to consumers, the way the information is disseminated, and the level of public awareness and interest.

a. Policy statements. Policy statements are typically issued to encourage and assist an industry in voluntarily addressing certain concerns through government-recommended actions, rather than through the imposition of rules, the violation of which could result in administrative actions or lawsuits against the offending institution. Where firms are subject to the jurisdiction of multiple regulators, an interagency policy statement can provide a uniform approach to addressing common concerns. After such a statement is issued, agencies can monitor its effectiveness (e.g., through compliance examinations or surveys) to ascertain whether voluntary industry action is adequate to deal with the agencies' concerns and to determine whether further steps or alternative actions are required. Because policy statements are intended to encourage certain activities rather than mandate those activities, they typically allow companies greater flexibility in their method of compliance than would a more formal regulatory regime. Flexibility may be particularly desirable at an early stage of product development.

Policy statements do have limitations. They do not have the force and effect of law. Affected parties generally cannot be cited in a compliance examination or sued because of the failure to comply with a provision of a policy statement. Statements issued by a single government agency or type of agency may have jurisdictional limitations. For example, interagency statements issued by the federal financial regulatory agencies generally would not apply to nonbank entities.

Assuming that a policy statement presents the appropriate guidance to address a concern, its success in achieving its purpose rests on a number of factors, including, most importantly, the level of industry cooperation. Noncompliance even by a few, imposing harm on affected consumers, could have adverse consequences for the entire industry by prompting the

government to initiate regulation. In addition, if divergent viewpoints exist on the guidance to be provided—for example, when multiple regulators are involved—achieving consensus may involve guidance that is too general to be effective. In instances in which some regulators aggressively encourage compliance with a policy statement while others do not, institutions within the jurisdiction of the former may feel that they are subject to de facto regulation and may incur compliance costs approaching those associated with substantive regulation; such a situation would place them at a competitive disadvantage relative to institutions that are not as closely monitored. Nonetheless, vigorous efforts to ensure compliance with a policy statement may be preferable to formal regulation because regulators would not need to formally cite institutions for technical violations or minor mistakes, particularly during the early stages of market development, when the technology and product characteristics are still evolving and the level of consumer acceptance is unclear.

Policy statements have been used by the Board and other federal financial regulatory agencies in areas not addressed by existing law, such as the minimization of delays by depository institutions in making funds available to consumers, the promotion and purchase of nondeposit investment products, and the provision of basic financial services (sometimes termed “lifeline banking”). In other cases, policy statements have related to existing laws, such as policy statements on credit discrimination and community reinvestment and on practices used to prescreen credit applicants. Experience with the various policy statements has differed. In some cases, the policy statements seem largely to have achieved the desired outcome. In others, policy statements seem to have been only partly effective or ineffective.

In March 1984, the federal financial regulatory agencies issued an interagency policy statement encouraging financial institutions to review their policies on making funds from deposited checks available to customers.¹⁰³ The policy statement urged institutions to avoid imposing unnecessarily long delays in making funds available, especially when the funds were from deposited government checks. It also urged institutions to disclose their funds availability schedules to customers. Available evidence at that time indicated that a small number of financial institutions delayed availability of deposited funds for unnecessarily long periods of time.¹⁰⁴ The policy statement does not appear to have been sufficiently effective in changing the availability policies at these institutions. In response to several high-profile cases involving lengthy holds on deposited checks, the Congress passed the Expedited Funds Availability Act of 1987, which mandated disclosures and specified maximum hold periods for deposited checks.

In October 1986, the Federal Financial Institutions Examination Council approved a policy statement that encouraged depository institutions to offer low-cost accounts providing

¹⁰³. 49 Fed. Reg. 11,868 (1984).

¹⁰⁴. Board of Governors of the Federal Reserve System, 1978 Survey of Bank Practices.

basic financial services for low- and moderate-income consumers.¹⁰⁵ The banking agencies have not collected any information to evaluate the effectiveness of the policy statement. Data from industry surveys, however, suggest that this policy statement may have been helpful. Since the issuance of the policy statement, the number of financial institutions offering a basic financial services account has increased substantially.¹⁰⁶

In February 1994, the federal banking agencies issued an interagency policy statement on the retail sale of nondeposit investment products.¹⁰⁷ The policy statement provides specific guidance to banks on appropriate disclosures to consumers about the nature and risks associated with uninsured mutual funds, annuities, and other nondeposit investment products; describes acceptable practices for selling uninsured products; and encourages the development of a compliance program by institutions. The policy statement also states that the federal banking agencies will examine for compliance and that failure to comply with the policy statement will subject an institution to criticism and appropriate corrective action. Thus far, compliance examinations and surveys indicate that banks have generally followed the guidance provided in the policy statement.

Given the wide variety of electronic stored-value products and the fact that they are in the infancy stage of development, agency policy statements to address consumer protection needs associated with the use of these products could be an appealing alternative to substantive regulation under the Electronic Fund Transfer Act. Guidelines could, among other things, encourage electronic stored-value providers to ensure that consumers know the nature of and the risks associated with the use of the products. For example, besides disclosing any risks associated with loss of the products, the providers might disclose that certain federal credit and debit card rules may not apply and that funds maintained on the product are not federally insured; they could also specify the fees that are associated with the product and the person or group to contact if a problem arises.¹⁰⁸ Providers also might be encouraged to establish error-resolution procedures, particularly for instances in which the product malfunctions. The federal financial regulatory agencies could monitor compliance with the provisions of a policy statement by depository institutions through compliance examinations. However, that compliance by nonbank entities offering electronic stored-value products might not be subject to

¹⁰⁵. 52 Fed. Reg. 7024 (1986).

¹⁰⁶. For example, the percentage of large banks (assets greater than \$1 million) offering basic financial services accounts increased from 25 percent to 92 percent. See American Bankers Association, *Retail Banking Report* (Washington, D.C.: American Bankers Association, 1985 and 1995).

¹⁰⁷. Federal Reserve Board supervisory opinion letter SR 94-11 (FIS), 94.

¹⁰⁸. The Office of the Comptroller of the Currency issued guidelines on electronic stored-value products in September 1996. See U.S. Office of the Comptroller of the Currency, *Stored Value Card Systems, OCC Bulletin*. 96-48, September 3, 1996. The guidelines suggested that providers of stored-value cards provide customers with information on how to use the product, what fees might be imposed, and responsibilities for lost or stolen cards.

examination would perhaps limit the effectiveness of the policy statement and put examined institutions at a competitive disadvantage.

b. Consumer education program. One of the roles for consumer education is to help ensure that consumers have the information they need to make informed decisions. Well-informed consumers are necessary for an efficiently functioning marketplace. Education helps consumers process the information they receive, but merely providing information to consumers may not be effective in helping them make decisions. The information should be presented in a useful format, and consumers need to learn how to use the information in their decisionmaking.¹⁰⁹ Effective consumer education can, in some cases, eliminate the need for more burdensome legislative or regulatory initiatives.

The extent to which consumer education is needed and is effective in enforcing outcomes is closely related to the nature of the product. For products with fairly standard features, uniform pricing, and high purchase frequency there seems to be little or no need for formal consumer education. When a new product, such as an electronic stored-value card, is introduced, consumers must learn about the product's existence, characteristics, and potential uses. Suppliers have an incentive to facilitate this learning process by providing educational materials and information. Where the government perceives that industry efforts to educate the public are inadequate, it may choose to incur the cost of undertaking its own consumer education programs. However, the government may have difficulty designing an effective consumer education program for a new and rapidly evolving product, particularly when product features vary considerably across providers and applications.

Without significant resources for public awareness campaigns or targeted educational programs, consumer information and education can take time to work. Faced with anecdotal evidence of consumer problems during the early stages of an education program, legislators or regulators may conclude that education is not working and that regulation is necessary to protect consumers.

A targeted consumer education program for electronic stored-value products might have as its primary goal ensuring consumer understanding of the nature of these products and the risks associated with them to facilitate informed decisionmaking with regard to their use. It would require identifying and disseminating the key information needed by consumers to make informed choices about such products and educating consumers about how to use the information. It seems particularly important to make consumers aware that some of these products are essentially cash substitutes and may not have the federal law protection afforded

¹⁰⁹. K.M.M. Chandler, E.M. Crown, and S.A. Brown, "Consumer Information and Education Effects on Knowledge and Choice of Fire Resistant Upholstery," *Journal of Consumer Affairs* 25 (1991), pp 339-57; J.E. Russo, "Information Processing from the Consumer's Perspective," in E.S. Maynes, ed., *The Frontier of Research in the Consumer Interest* (Columbia, Missouri: American Council on Consumer Interests, 1988), pp. 185-218.

credit cards and debit cards, such as federally imposed liability limits when the card is lost or stolen or federally mandated error-resolution procedures.

3. *New Consumer Protection Legislation Applied Specifically to Stored-Value Products.* As discussed above, the Electronic Fund Transfer Act and Regulation E provide consumer protection primarily through disclosures, liability limits, documentation, and error-resolution procedures. If deemed necessary, state law or a new federal law instead of Regulation E could provide these protections.

Sometimes it may be more appropriate for states than for the federal government to regulate an area or to enact certain substantive rules. If states determine that current federal or state law provides inadequate consumer protection when its citizens use electronic stored-value products, they may amend their existing laws or enact new ones. States might, for example, pass laws requiring disclosures about fees and liability risks associated with the use of the products, providing redemption rights and error-resolution rights concerning malfunctioning products, addressing privacy issues, and clarifying how the escheat laws (laws addressing unclaimed property that reverts to a state) would apply to electronic stored-value products. State-level regulation also provides an opportunity for regulatory innovation, as described in section II, and for an evaluation of the strengths and weaknesses of alternative regulatory approaches.

Certain state law regulation of electronic stored-value products, however, could be more costly to the industry than federal regulation. Some of these products may be offered only in one state, but many are offered interstate. Typically, laws among the states are not uniform. This lack of uniformity can affect the operating costs in offering stored-value products from state to state, particularly where state laws are inconsistent with each other. Differences in state laws can also affect a provider's ability to compete in the marketplace and, in some instances, may adversely affect consumers. Some providers may choose not to do business in particular states. Those that choose to incur the operating costs associated with complying with the rules of a heavily regulated state or of different states may pass those costs on to consumers. And others may not enter or may drop out of the market because the cost of doing business state to state is prohibitive—limiting the number of service providers and narrowing consumers' choices.

An argument could be made that the Electronic Fund Transfer Act is not designed to address today's rapidly evolving electronic payment systems. Some electronic stored-value products may not be subject to Regulation E because they may not involve consumer asset accounts. New federal legislation could provide a more appropriate framework than modification of the Electronic Fund Transfer Act requirements. Any new legislation would have to address issues similar to those arising under the act (for example, a clear definition of electronic stored-value products to distinguish them from debit cards subject to the act). The legislation could address consumer protections parallel to those provided by the Electronic Fund

Transfer Act, as appropriate. If the Congress believed that other protection in areas such as financial reliability—was also needed, the legislation could address it. The costs and benefits of any new legislative proposal would be difficult to determine, particularly given the uncertainties surrounding the future development of electronic stored-value products. Furthermore, the widely varying characteristics and applications of existing and proposed electronic stored-value products would make it difficult to develop new legislation that would not distort market outcomes by imposing costs that may vary considerably across products and by influencing providers' choices of products and technologies.

D. Summary

There is great variety in existing and planned electronic stored-value products. That one set of Regulation E consumer protections or any other set of consumer protections would be appropriate for all such products seems unlikely. The existing legal framework provides considerable incentives for providers of these products to disclose terms and to avoid unconscionable or unfair terms. Moreover, providers need to make electronic stored-value products attractive to both consumers and merchants and to inform potential customers about their products' characteristics to induce consumers to substitute them for more familiar payment alternatives. Given the limited experience with electronic stored-value products to date, it is difficult to predict whether the benefits to consumers from any particular Regulation E provision would outweigh the corresponding costs of compliance.

As discussed in the previous section, full application of Regulation E would likely impose substantial operating and opportunity costs of compliance. Partial application of Regulation E would be less burdensome than full application but, depending on the details, could still impose significant operating and opportunity costs for some electronic stored-value products. None of the approaches for partial application of Regulation E are without problems. The approach to applying Regulation E to electronic stored-value products that would impose the smallest opportunity costs and be least likely to inhibit development of the new technology is the one that requires only initial disclosures. Even this approach, however, has the potential to distort market outcomes if, for example, it differentially affects the costs of alternative products. Furthermore, the benefits that would result from any of these approaches to regulation of electronic stored-value products are unclear at this time. Instead of applying Regulation E, new state or federal legislation could be written to address consumer protection concerns related to electronic stored-value products. However, the costs and benefits of any new legislative proposal would be difficult to determine, particularly given the uncertainties surrounding the future development of these products.

Steps short of regulation could be undertaken. Policy statements could provide guidance to the industry about the agencies' expectations for industry practices. Their success would depend, in part, on the industry's willingness to follow government guidelines, since generally there is no enforcement mechanism. Consumer education programs are an alternative mechanism for addressing consumer protection concerns. A targeted education program could provide useful information to consumers and supplement the information provided by the private sector. In deciding whether to undertake such programs, the government should consider whether the incremental increase in information is sufficient to justify the costs of developing and implementing the programs.

1. Average cost per electronic fund transfer for compliance with Regulation E,
by type of cost and deposit–size of bank, 1980¹

Cents

<u>Type of cost</u>	<u>Size of bank by deposits (millions of dollars)</u>			
	<u>Less than 500</u>	<u>500–2,999</u>	<u>3,000 or more</u>	<u>All banks</u>
Start-up	11	12	6	10
Ongoing	17	8	4	11

¹ Source: Frederick J. Schroeder, *Compliance Costs and Consumer Benefits of the Electronic Fund Transfer Act: Recent Survey Evidence*, Staff Study 143 (Board of Governors of the Federal Reserve System, 1985), table 4. Statistics in this table are weighted averages of data reported by Schroeder. The weights are based on aggregate deposits at all commercial banks in 1980.

2. Distribution of costs for compliance with Regulation E across categories of cost, by type of cost and deposit–size of bank, 1980¹

Percent

	<u>Size of bank by deposits (millions of dollars)</u>			
	<u>Less than 500</u>	<u>500–2,999</u>	<u>3,000 or more</u>	<u>All banks</u>
<i>Start-up</i>				
Management	43	28	26	36
Training	16	7	8	12
Data processing	19	50	47	33
Equipment	6	4	2	4
Disclosures	10	8	14	10
Other	5	3	4	4
TOTAL ²	100	100	100	100
<i>Ongoing</i>				
Management	28	28	16	26
Labor	46	32	36	43
Training	4	4	6	4
Disclosures	9	16	8	10
Postage	6	18	18	10
Equipment	6	1	10	5
Other	2	1	8	3
TOTAL ²	100	100	100	100

¹ Source: Frederick J. Schroeder, *Compliance Costs and Consumer Benefits of the Electronic Fund Transfer Act: Recent Survey Evidence*, Staff Study 143 (Board of Governors of the Federal Reserve System, 1985), table 3. Statistics in this table are weighted averages of data reported by Schroeder. The weights are based on aggregate deposits at all commercial banks in 1980.

² Components may not sum to 100 percent due to rounding.