The Policy Implications of Technology for the Future of Financial Services

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Good morning. As the sole central banker on this panel, I feel compelled to start from first principles by addressing my comments to three broad questions. First, why do central banks have such a keen interest in financial services, whether or not they provide some of them as directly, and for profit, the way the Federal Reserve System does in the United States? What are the specific risks and opportunities technological progress brings both to the provision of financial services and how a central bank oversees that process? And finally, what do I believe are some of the issues central bankers must address going forward to assure financial services are provided in ways that are consistent with sound economic growth?

Financial services--defined as deposit or investment services, credit extensions, and payments processing--are the lifeblood of a modern market economy. They are the means through which both the exchange and the accumulation of economic value takes place, and their efficiency, reliability, security, and certainty of value are vitally important to the confidence society has in its economic processes. Central banks exist to protect the value of a country's currency, to provide a bulwark in times of financial instability, and, in one way or

another, to assure the financial system is served by a strong and viable banking system. Central banks cannot perform these tasks without a deep and abiding concern over how financial services are provided. Whether small value or large, retail or wholesale, if the public loses confidence that the provision of financial services will be safe and certain, the risks of instability loom, the viability of the banking system is in jeopardy, and, ultimately even the soundness of the currency could be at risk.

We in Boston have an abiding memory of the Rhode Island thrift crisis when doubt that Social Security payments could be made on a regular basis threatened not just the uninsured thrifts in Rhode Island, but the deposits at thrifts across the border in Massachusetts as well, and even national public confidence in the electronic ACH system. Large values do not have to be involved to create a crisis of major proportion. Thus, I would argue that it is impossible for a central bank not to have a deep and abiding interest in how <u>all</u> financial services are provided, to have the capacity to ensure their continuation when problems occur, as we in Boston did in Rhode Island by arranging alternate receivers of Social Security deposits, and supporting them operationally, and to have a say in the future development of such

services, either by providing them directly, by regulation, by collaboration with the private sector, or some combination of all three.

That technological change is affecting the provision of financial services in the United States simply goes without saying. The pace of such change has seemingly never been greater. Smart cards, electronic checks, various electronic money alternatives, combined with the emergence of extensive, broadly accessible communications facilities such as the Internet are rapidly expanding the choices available for low-value services. Similarly in the wholesale arena, new and enhanced communication, trading, clearing and settlements systems are forging linkages among growing numbers of institutions, domestically and internationally.

Technological change has spurred the development of increasingly sophisticated financial instruments--like derivatives--that radically change the nature of bank balance sheets and the transparency with which regulators and market participants alike can appreciate an institution's financial health. Technology has brought new competitors into the arena, blurring the distinction between the provision of information services and financial services, and posing issues as to how, if at all, these new services can or should be regulated. And

technology even threatens the very definition of the money supply as stored value cards and software-based electronic transfer systems begin to provide value transfer capabilities. How can central banks ensure the safety of the financial system when technological change that creates broadened access, lower costs, new national and international linkages, and the potential for unauthorized access and large-scale fraud at least holds the possibility for making that system increasingly vulnerable?

Part of the answer to that question lies in the opportunities presented by technological change. Some of these opportunities have immense potential for economic good, while others help both financial institutions and central banks get their arms around the new sources of risk.

One opportunity is clearly presented by the impact technological change can make on the nation's largely paper-based retail payment system. The system is burdened by the need to process and collect more than 60 billion paper checks annually, at a cost that has been estimated at nearly 1 percent of the nation's GDP. The inefficiencies in the current paper payments process derive largely from the transportation and repetitious handling and processing that occur during

the collection of each check. The technology is now at hand to deliver most of the critical information on the check electronically, with the potential for reducing societal costs over time, and controlling the potential for fraud. In 1996, Reserve Banks provided electronic presentment for about 15 percent of checks they collected, and delivered electronic information with another 16 percent. Depository institutions can also now deposit checks electronically with Reserve Banks creating the beginning stages of a comprehensive end-to-end electronic check collection infrastructure. Moreover, image technology is being used to reduce by days the availability of check payment information to the U.S. Treasury, and can be used to shorten check return time frames, helping to address the growing concerns about check fraud.

On the risk management side, technology combined with sophisticated mathematical techniques, make centralized risk management possible for global financial institutions. We as regulators now use high-tech approaches to understand the risks facing financial institutions, and these new approaches are vital if we are to ever fully comprehend the condition of organizations whose balance sheets are constantly changing.

Finally, central banks, especially the Federal Reserve System, are themselves being vitally transformed by technology. We collect and analyze data more efficiently, and have at our disposal nationwide information on bank structure never available prior to recent improvements in data base technology. We provide services now that are far more efficient, secure, and reliable than previously, through consolidated processing sites, jointly developed software, and cost and risk-focused systems made possible by technological progress. Reserve Banks are becoming better at what we do both individually and collectively, and increasing use of technology is vital to that effort. However, in the midst of all of this progress, and technological change, Reserve Banks also need to remain focused on their reason for being--establishing policies that ensure the financial stability and economic growth of the country. In that regard, I want to mention just a few issues related to the policy implications of technology.

First, while technological change is a certainty, the implications of any particular change for economic growth are far from that. Central banks need to be aware of that and react with caution. If this conference is like many of those I've attended over the years, during the next couple of days, you may hear about quite a few "whiz-bang"

changes in financial services. Will they survive and proliferate to the degree their sponsors envision? Will stored value cards and other private transfer systems completely replace the money supply any time in the remotely near future? Probably not, just as the checkless society we all talked about in the early 70s with the advent of the ACH has yet to emerge.

At a conference on the links between technology and growth sponsored by the Federal Reserve Bank of Boston last summer, Stanford Professor Nathan Rosenberg presented his thoughts on why it has been so difficult to foresee the impact of even eminently technologically practical inventions. He particularly noted that the pace and uncertainty of technological diffusion is related to how innovation is first perceived, to the development of complementary technologies, and to the ability of innovations to pass a market-based, cost benefit test. He concluded it may be impossible to know what research or development will turn out to be relevant, or relevant to what! This should teach us to be very humble about our ability to foresee how technology will change financial services. It's also not clear how or whether to regulate these changes a priori. However, even in the face of such uncertainty, I believe progress can be made in an evolutionary

way to use technology to improve the efficiency and effectiveness of the nation's financial services, and here I believe Reserve Banks can play a vital role.

For example, Reserve Banks as intermediaries can make considerable impact on the nation's payment system, and by extension its financial services, by working to fully implement the backoffice technologies I mentioned earlier that show such promise for end-to-end electronic check collection. One of the factors that has inhibited such a fundamental re-engineering of the check payments process is the belief that the large majority of consumers and corporations want to receive their checks each month.

Reserve Banks are currently pursuing a test of whether this is true in collaboration with the industry. Some market research conducted in preparation for this test indicates that nearly 85 percent of both consumers and corporations are either neutral or positive about not receiving the monthly flow of paper if they are supported by enhanced services from banks. This suggests that critical mass can be attained to pursue a comprehensive electronic presentment environment, with significant consolidation of a number of functions currently performed in the back office of each and every check processing facility around

the country. Complementary legal and regulatory change will of course be needed here as well. By working to implement the necessary technology within Reserve Bank processes themselves, however, and by working with the industry to understand the barriers to further progress, I think we can help to make the benefits of technology in this important area less uncertain.

A second major issue that requires policy focus is credit risk. While new competitors abound in the arena of financial services, we must be careful to remember that credit is at the heart of such services. That is why I am such a strong believer that depository institutions, with their inherent expertise in assessing credit risk, must continue to play a critical role in financial services. Information services are clearly important, and providers of software and hardware can create innovative ways for consumers to access information and expand the menu of choices available to them.

But at the end of the day, for most financial services to be provided in a timely way, credit is extended, sometimes for only an instant, but very often longer than that. Central bankers need to remain focused on that fact, and on the fact that the financial stability brought about by depository institution regulation and oversight could

quickly be threatened if problems occur in the provision of financial services by unregulated entities. So far "virtual banks" have been recognized as depository institutions, and regulated as such, but I worry a bit about the potential for free-standing, banking-like services that could be offered by nonbanks and what the implications of these might be for the scope of the federal safety net, the stability of the payments system, and the prospects for a level playing field with banks providing such services.

Third, it's tempting to see technology as the beginning and end of a new financial service, but in fact it is only the envelope in which the service is provided. The contents of the envelope--the service itself--need to be evaluated as to whether its structure, its legal framework, the health of its providers, the security of the system, are all consistent with both financial safety and economic growth. One cannot look at a financial service independently of knowing the roles, rights, obligations and liabilities of both those who use it, and those who provide it. Consumers who make payments through homebanking systems today probably assume that those payments are being made electronically and yet the largest processor of these types of payments uses checks for over half of the payments. If the bill is not paid on time, who is liable

in this payment process which now involves new intermediaries and both electronic and paper flows in the process? Legal system development is critical here.

I should also note at this point that the most spectacular financial problems of the 90s--Orange County, Kidder Peabody, Barings--occurred not because of the technology involved, even though complicated derivatives products and sophisticated trading played a role in all three. The real problem in all three lay in the failure of old-fashioned controls--separation of duties and audit independence, just to name a couple. Indeed, the apparent sophistication of the products and practices, and their apparent high profitability, may well have deterred the application of those old-fashioned controls--a lesson to keep in mind as new technologies develop. Central banks, regulators of all sorts, and financial service providers themselves have to continually focus on the simple time-tested controls even in the face of increasing technological sophistication.

Fourth, central banks need to consider how oversight of new technologies might best be undertaken. I noted earlier that new regulation might be overkill right now. But in the provision of many of the more traditional payment-related financial services, the providers of

the services themselves created a level of oversight through clearing houses, standards setting, and common risk control mechanisms. This type of oversight is clearly more difficult in arenas where the service provider may not be regulated; where the appreciation that credit--and therefore, risk--is involved may not be preeminent in the thinking of service providers, and where the culture of cooperation among providers to limit systemic risk may be absent. Central banks need to understand who is providing new financial services and how the rules, controls, and participation in such services work together. And we must ensure over time that all of these enhance rather than detract from financial stability.

Finally, a clear issue for central banks has to be how to stay enough involved in technological innovation to play a role in shaping strategic developments moving forward. I believe this is and should be a key responsibility for the Federal Reserve System--one that it has met traditionally by being a participant and a regulator domestically, and by being active in policy setting internationally. Increasingly, however, the Reserve Bank role as a financial intermediary is likely to diminish, as more financial services are provided by non-banks, and as banking organizations themselves merge and expand nationwide. We at the

Federal Reserve need, I believe, to be at once much more forward-looking and willing to work in collaborative ways with the private sector to ensure financial service provision is consistent with economic growth. This process has begun.

We know that more robust and less costly communication facilities, such as the Internet, and inexpensive "user friendly" PC software have the potential to provide access and convenience for many consumer and corporate payments that in the past has only been available from checks. I think there is room for a great deal of agnosticism about whether the Internet can be made secure and reliable enough for actual payment transfers, but it is likely not possible to hold back the tide of technological evolution here more than it is anywhere else. Rather, I believe the Federal Reserve needs to ensure the right measures are taken. Reserve Banks are working collaboratively on tests of new forms of electronic payments, in standards development forums, and in forums that are developing the technologies to enhance the security associated with these new forms of payments. This collaborative work is necessary to ensure interoperability among the many new types of emerging payments and to reduce the potential for increased risks associated with the application of new technologies.

We have also been working with the National Automated Clearing House and the U.S. Treasury to educate financial institutions, consumers and corporations about electronic payments and the mandate to make most government payments electronically by January 1, 1999. However, I believe these types of collaborative efforts need to be strengthened and deepened. Reserve Banks are competitors with some in the financial services arena; I think they need to be seen as effective collaborators as well.

Technological progress is rapidly changing the landscape for financial services. As a policy matter, central banks need to ensure this will not threaten financial stability, and will serve to enhance economic growth. We cannot be distracted by the glitzy envelope of technology; we must remain focused on the realizable promises of increased efficiency, on the legal, structural, and control aspects of new systems, on security, and on participant and central bank oversight and involvement in strategic direction-setting.