

# [Embracing Change]

[ Our Changing  
Environment

The  
Payments  
Evolution

New Approaches  
to Education

Managing Risk

An Economy  
Transformed ]



Dorothy Simpson Krause, Untitled (History Series - Charter 2003), mixed media; Bank Collection

## Over its entire history,

the Federal Reserve Bank of Boston has faced changes in the economy, in the financial services industry, and in its responsibilities. At times, we've reacted to change; at times, the Bank has served as a catalyst, as our staff have explored new ways to accomplish the tasks facing us. The Bank's mission has remained the same over the years—to support sound economic growth and financial stability in New England and the nation. But the ways in which we fulfill our mission and meet our changing responsibilities have evolved. Philosophers tell us that change is the only constant, but its pace is hardly constant. At present, it seems to be accelerating.

This essay features short segments on some aspects of change in the Bank in 2003 and beyond. It describes changes affecting the economy, our building and security measures, payments operations, educational efforts, and bank supervision. These are very different areas, but changes in each are driven by advances in technology, increasing complexity, and a continuing need to operate more efficiently and effectively.

*[With appreciation to editor Kristin F. Kandors and graphic designer Fabienne Anselme Madsen]*



[A view from the Bank looking at the city under construction.]

# Our Changing Environment

[ The completion of the Big Dig  
and enhanced security prompt  
major building change. ]

**W**e in Boston have been experiencing the sights and sounds of the Central Artery/Tunnel Project for over a decade. The “Big Dig” was one of the largest and most complex and expensive highway projects in American history, and it is now in its final stages. Construction projects always cause some inconvenience, and this one certainly has. But the Big Dig is providing a once in a lifetime opportunity to improve the downtown Boston area.

At the Federal Reserve Bank of Boston, we have had a firsthand view of the construction. For a time, it was literally taking place in-house, as a part of our building underground was used for the slurry wall that enabled the tunnel to be built down



[Federal law enforcement officers, Monday, 8:13 a.m.]

## Plans to renovate the plaza area have been in development since the late 1990s.

Atlantic Avenue. We are now taking advantage of the completion of this massive project to renovate our five and a half acre site to make it both more secure and more attractive. Plans for restoring the front plaza and other areas around the building have been in development since the late 1990s. After September 11, 2001, enhanced security elements became an additional consideration.

When our building was built in the 1970s, it was intended to be an open, welcoming

facility with a public purpose and public space. We retain our desire to welcome visitors as well as our tenants and their visitors. But the times require new methods to improve security. Our Protection Officers are now fully trained federal law enforcement officers, and we use the best technology we can find to augment security—all in an effort to strike the right balance between security and accessibility.



Since 9/11, we have been increasing our protection presence, and our Protection Department personnel are now certified law enforcement officers.



[Entering our building, Monday, 9:43 a.m.]





[Checks on the high speed sorter, Tuesday, 5:39 a.m.]

# The Payments Evolution

[ The long awaited transition to  
electronic retail payments  
is finally here. ]

**T**he long awaited transition to electronic retail payments is finally here. Instead of pulling out checkbooks, people today swipe debit and credit cards at the corner store, initiate purchases online, and sign up for automatic payment plans. Businesses are finding new ways for electronics to reduce their payment transaction costs, and lawmakers have eased the way for check imaging. These changes are having a considerable effect on Federal Reserve Bank operations, both around the nation and in Boston.

The reasons for the paper check decline are understandable: consumers are attracted to the convenience of electronic payments, and businesses like the economics of converting checks to electronic transactions. For example, a credit card processor might convert the checks it receives to auto-



[The check team at work, Tuesday, 6:15 a.m.]



mated clearinghouse (ACH) transactions at its processing site and then, shortly thereafter, destroy the paper checks and store an electronic copy for recordkeeping purposes. This process is faster, cheaper, and safer than traditional paper processing.

Most knowledgeable observers thought about 70 billion checks were being written in the United States as recently as 2000. Research conducted by the Federal Reserve put the number closer to 40 billion; and that is declining, likely by as much as 5 percent a year. In addition, commercial bank mergers have reduced demand for the Federal Reserve's services as a check clearing intermediary, and competition among check processors has intensified. Reserve Banks will be challenged to reduce the Federal Reserve

System's check processing infrastructure while at the same time positioning Bank services as viable alternatives should depository institutions outsource their check processing or need Reserve Banks to clear checks when problems occur.

This year, the Reserve Banks are responding to the current volume decline by discontinuing check processing at 13 of 45 sites, although check collection services will continue to be offered nationwide. Check adjustments, the error-resolution portion of the check business, will be handled in only one location per Reserve District. For Boston, this means we will do our error-resolution work at our office in Windsor Locks, Connecticut. Check processing will continue at both our Boston and our Windsor Locks

sites, although as volumes continue to decline, we will have to consider all options facing us.

Technological change has made this consolidation and downsizing possible. In 2003, we in Boston converted our large processing offices to new, standard software that will enable the Banks' central technology operations to manage our check equipment. All Reserve Banks now provide consistent products and services across the country; check adjustments processing is integrated in ways

that enable each Bank to help others as necessary; and digital imaging services for checks are standardized nationwide. Boston provides image services to commercial customers across the country and to the U.S. Treasury. These changes meet the needs of financial institutions that use services from multiple Reserve Banks. They also help the Banks increase efficiency and respond more quickly when launching new products.

Modernization of check processing is proving useful in other ways. The common

Even as electronic payments take hold, we still have to process billions of paper checks.



Cash being  
verified and  
processed,  
Tuesday,  
10:18 a.m.]

## Profiles:

A few minutes with Jim Cunha . . .



### Emerging Payments

We are seeing tremendous change and growth in our work with the U.S. Treasury, especially as we provide stored value card services for the U.S. military. Stored value cards (a type of smart card) enable military personnel to be paid and make purchases easily and electronically. We entered the stored value card business in 2000, and today we are 20-people strong. We provide services to military training bases across the nation and in a handful of peacekeeping bases abroad. Earlier this year we deployed our system in Afghanistan and Qatar.

Because we own—rather than license—the software used on the smart cards, we have full responsibility for its future development, and this is really exciting. Both the technology and the business requirements of our operation are changing rapidly, so we are always being challenged and trying new things. I think of our business as a start-up technology services company, right here in the Fed.

*Jim Cunha, Vice President,  
Electronic Payment and Treasury Services*

platform is making it easier for Reserve Banks to develop standards and services to implement the new “Check 21” legislation in October 2004. Check 21, short for the “Check Clearing in the 21st Century Act,” removes the legal barriers to using digital images of checks as proof of payment. We expect Check 21 to increase efficiency in the payments system and encourage banks to provide innovative services to their customers.

At the same time that paper is declining, fully automated retail payment processes are gaining favor and using Reserve Bank services. The ACH is increasingly the way electronic payments are settled. In addition, other new electronic payment options seem to be developing at a rapid pace, pushed by consumer and business needs, and by the needs of the U.S. Treasury. The Reserve Banks are playing a leadership role both in the net-

**Check 21 will  
increase check  
processing  
efficiency.**

works that support electronic payments and in serving the Treasury’s needs. Retail payments are evolving. This is good for the payment system and good for the economy. All transitions bring challenges; we are ready to meet them.



[Processing checks on the medium speed sorter, Wednesday, 6:15 a.m.]



[Cash bundles ready to go, Wednesday, 11:28 a.m.]



[Wholesale payment transactions being made, Wednesday, 3:14 p.m.]



[The Economic Adventure has hosted many school groups since opening in October 2003.]

[www.economicadventure.org](http://www.economicadventure.org)

# New Approaches to Economic and Financial Education

[ This past fall, the  
Federal Reserve Bank of Boston opened  
the New England Economic Adventure  
to show how economies grow. ]

When making decisions about how to save and spend, consumers face an ever-increasing array of financial products and services. Access to credit has grown tremendously, bringing new benefits but also posing new risks. In response, the Federal Reserve System has been intensifying its educational efforts. When consumers understand financial alternatives and make smart decisions, they help themselves and contribute to a stronger overall economy.

The Federal Reserve Bank of Boston has a long history of helping consumers understand economic and financial issues. We provide education about what the nation's central bank does and why, as well as insights into the workings of the economy more generally. In addition, our Community Affairs function has become increasingly



[The Adventure features objects from the 1810s, 1890s, and 1960s.]

The Adventure uses  
New England case histories to  
demonstrate the connection  
between productivity and  
living standards.

active in promoting financial literacy, the personal side of economics.

Boston's educational efforts in economics—both general and personal—were very much in evidence in 2003. In the fall, we opened the New England Economic Adventure, an educational program combining exhibits, video, and interactive games to show how increases in productivity have improved living standards. The Adventure celebrates the resilience of the New England economy by drawing upon the region's rich economic history to illustrate its theme. The experience engages visitors in exploring important economic concepts in an exciting way. It also includes an economic education laboratory and a web site with lesson plans and reference materials to help teachers use the Adventure to meet their evolving curriculum needs.

Community Affairs also supported a number of initiatives to educate consumers about such issues as the importance of saving, the wise use of credit, and the necessity of protecting personal financial information. The Community Affairs area dates from 1977 when the Federal Reserve was asked to implement the Community Reinvestment Act. This Act required supervised institutions to help meet the credit needs of low and moderate income communities, and over time they have proven they can do so. In Boston, commercial banks have stepped up their outreach to minority borrowers and neighborhoods. They have developed a variety of products to meet low and moderate income market needs. Communities report that they are becoming more comfortable with the financial

## Profiles:

### A few minutes with Lillian Seay . . .



### Classrooms in the Workplace

It seems so incongruous—sending students to a workplace to study—but the Classroom in the Workplace program has been very successful. After the release in 1999 of the standardized test scores (Massachusetts Comprehensive Assessment System) for South Boston High School, the Boston Fed asked how it could work with its partner high school to improve student education and MCAS scores in particular. We decided to expand our summer jobs program, to make study part of the program. In 1999, the Boston Fed and two other participating companies each hired about a dozen interns. Every workday included 90 minutes as designated time to practice reading. By the end of the summer, the interns' reading ability tested 1.5 grade levels higher. We piloted a math program in 2001 to address MCAS graduation requirements. Five students in our program were required to take the MCAS that year, and all of them passed. Because of the success we were having, we made Classroom in the Workplace a year-round program in 2002. The results remain impressive, and we've been able to increase the number of participating students.

In addition to improving their English and math skills, the students become more self-confident through working with adults. The program gives students the structure to succeed and an understanding of what they need to do to move ahead in life. Now we're encouraging students to attend college while working at the Bank. This is why I like working for the Bank: We have a commitment to outreach.

*Lillian Seay, Education and Partnership Specialist*



system, and minority households are increasingly becoming homeowners. Challenges remain, however, as financial products become more sophisticated, nonbank providers proliferate, and predatory lending becomes an increased focus of attention. In addition, increased immigration has expand-

ed the number of potential users of financial services who have limited experience with the U.S. financial system.

In response, Boston's Community Affairs area and its counterparts throughout the System have increased their emphasis on consumer-directed financial education.

Banks have stepped up outreach to minority borrowers and neighborhoods, developing products for low and moderate income needs.



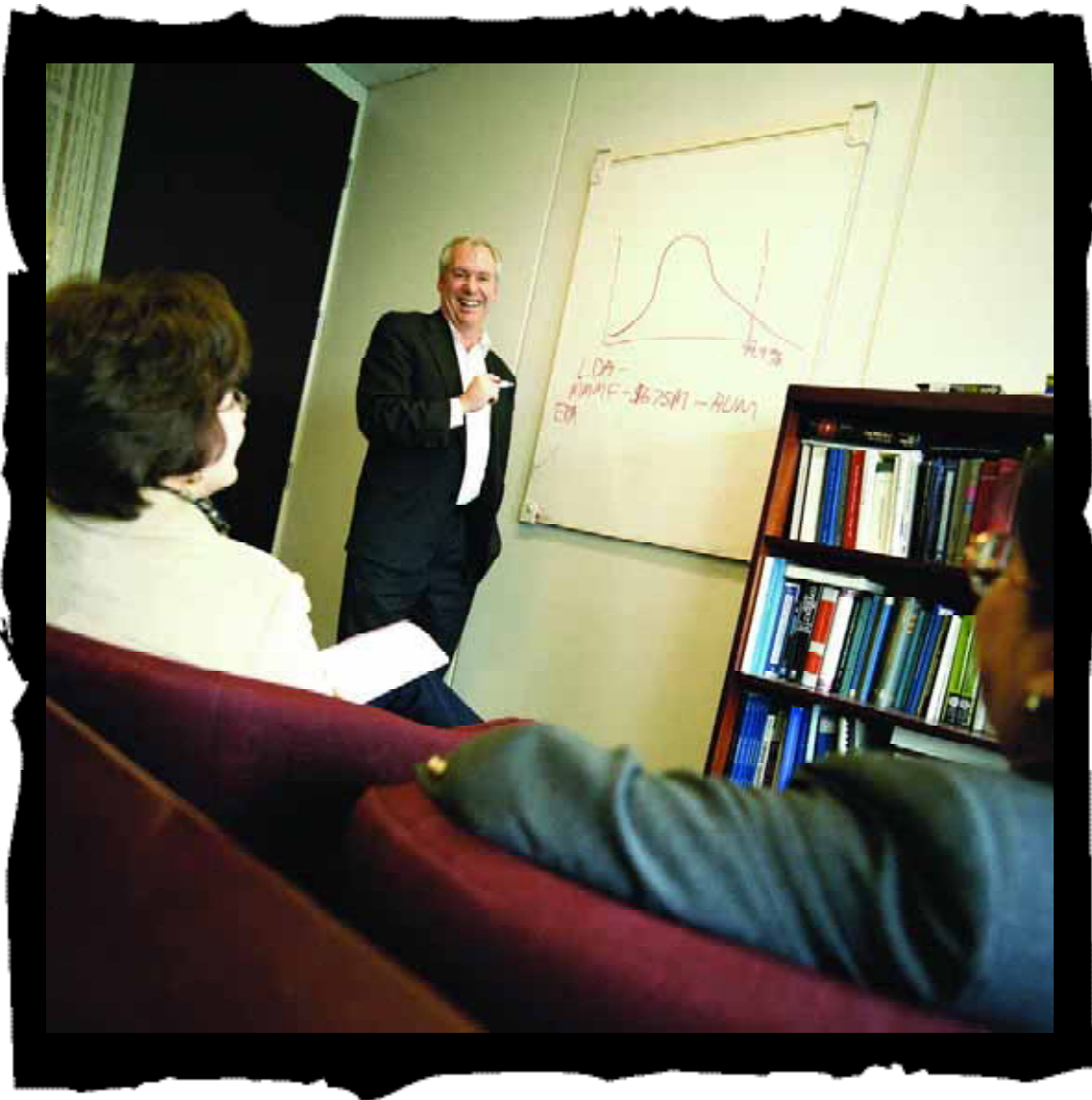
[Editing **Communities & Banking**, Thursday, 11:25 a.m.]



Community affairs meeting at the Federal Reserve,  
Thursday, 2:23 p.m.]

If borrowers and consumers of financial services are better informed about the financial products available to them, they will use these services and products more wisely. In delivering their message, both Community Affairs and our economic education staff work with nonprofit organizations, public schools, and other academic institutions to share expertise and enhance economic understanding with all our audiences.





[Discussing risk quantification, Tuesday, 10:48 a.m.]

# Managing Risk

## **Changes in the World of Supervision and Regulation**

For bankers and bank supervisors the evaluation and management of risk have become critically important.

The U.S. financial services sector generated about one-third of all U.S. corporate profits last year and had about one-fifth of the nation's market capitalization. Bank capital ratios were strong, even after the recession and the long, slow recovery. While not without its problems in the wake of a significant stock market correction and corporate governance problems, the banking industry emerged in remarkably strong shape. One reason for this was an increased focus on risk management.

Over the past decade, the nation's banks have been expanding across the country (and increasingly, the globe), diversifying income sources, hedging risks more effectively, and using technology to their advantage. These changes have come about



[Supervision and Regulation staff, Wednesday, 1:34 p.m.]

in part because regulatory barriers to geographic and product expansion have been removed. The industry has also refined its methods for quantifying and managing risks to deal with the changing landscape.

To effectively evaluate risks in the current

or from external events. Operational losses are often headline events: Employee fraud topples a respected bank; terrorist activity damages bank property; a bank settles a major lawsuit regarding its lending practices.

One of the key questions facing both

understand bank risks.

Modeling and measurement techniques for market risks, such as fluctuations in the stock market, are well established and integrated into risk management at most financial firms. Credit risk models that determine the likelihood and impact of loan defaults have existed for some time as well, though many have changed dramatically in recent years. The most recent risk to be analyzed quantitatively is operational risk. Operational risk is the risk of loss resulting from inadequate or failed internal processes, people, and systems

## Operational risk has received more attention recently.

complex environment requires an increasing degree of sophistication on the part of both bankers and bank regulators. Supervision and Regulation staff at the Federal Reserve Bank of Boston and at other Reserve Banks are focused on using the best and most appropriate tools to harness information and

bankers and regulators concerning operational risk is how much capital should be kept as a cushion against very large but unlikely losses. For most activities, the price charged

for the service provided or effective controls and automation can limit the costs of operational risk to a financial institution. But some operational losses are sizable, and banks and regulators have been looking for ways to translate the costs of those unexpected losses into capital requirements. U.S. bank regulators had been studying this issue for some time; now it is being incorporated into the evolving discussion of a new international capital standard known as Basel II (Basel I is the existing standard).

During 2003, staff in Boston undertook several specialized studies to gain a greater understanding of banks' actual operational loss experience and capital allocations to address potential losses. Our analysis helped us conduct and support supervisory examinations within our District and at some of the country's largest and most complex banking organizations. We have disseminated our analytical findings by publishing research, and we will work with the industry going forward to take advantage of data and technology to provide effective supervision. This is a change for us, and our staff is strengthening its capacity to meet these new supervision needs. Change brings challenges, for sure, but meeting this challenge will help the Bank work toward ensuring that the U.S. financial system remains strong and stable.

## Profiles:

### A few minutes with Jackie Palladino . . .

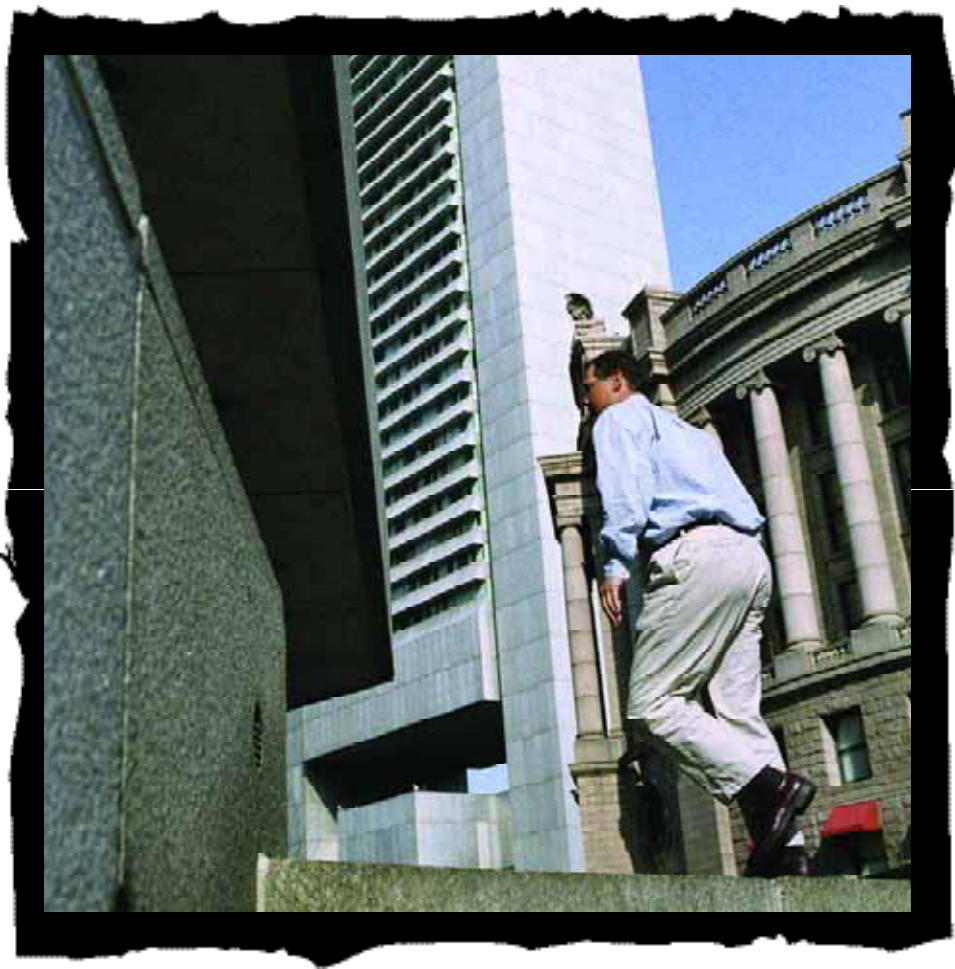


### Enterprise Risk

The financial services industry is ever more focused on risk management, and so are Reserve Banks. In Boston, we recently established an Enterprise Risk Management function to take a comprehensive look at the risks and opportunities that impact our strategic objectives. Our goals for this year include setting up an efficient framework to help us manage risks across the organization. We're also going to apply quantitative analysis in certain cases to enhance our risk management techniques. That is, we have a lot of controls, but do we have the right ones, and does our staff understand them?

I'm personally very excited about my new role because it will give me an opportunity to work with people in the business units and build upon existing risk management and control processes. A big part of my job will be to educate people about the role of risk management. As with anything new, I'm expecting some skepticism. But enterprise risk management can provide benefits, such as supporting informed decision-making and providing a view of risks that cross business lines. Ultimately, I think the best way to convince people will be to provide valuable and actionable information.

*Jackie Palladino, Chief Analyst and Enterprise Risk Manager*



[Our location in the financial district keeps us connected.]

# An Economy Transformed

## the “NEW” New Economy

[ The nation’s economy is reinventing itself  
in the face of technological change and  
intense global competition. ]

One of the most remarkable features of the U.S. economy over the past year has been the continuing surge in productivity. Indeed, after rising at a pace of 2.5 percent per year through the late 1990s—after better than 20 years at a percentage point lower—productivity growth surged even higher in the new century. Over the four quarters of 2003, productivity growth averaged better than 5 percent per year—truly a staggering number for a mature, industrialized economy. It seems unlikely that such strong productivity growth is sustainable, but it seems equally unlikely that productivity will revert to its rate of growth in the early 1990s.

What does seem likely is that the nation’s economy is reinventing itself in the face of newly emerging telecommunications technologies and intense global competition. The ongoing introduction of new technology and the ability of businesses to





[Fed economists discuss the economy, Monday, 11:15 a.m.]

use technology to improve efficiency augur well for the long run. In the short run, however, these changes have challenged everyone with the temerity to attempt economic forecasting—and that includes monetary policy-makers.

In the first half of 2003, growth stalled and productivity surged, widening the gap between the current level of activity and the economy's full-employment capacity. At the same time, inflation fell to levels that raised concerns among some. But real growth rebounded in the second half of the year, and business investment revived after a three-year hiatus. Partly as a consequence, inflation appears to have stabilized in recent months.

Despite the resurgence in demand, however, new hiring remained weak. Boston Fed economists devoted significant research

effort to making sense of this puzzling confluence of revitalized demand, stagnant employment, and high productivity growth. We were not alone in our puzzlement, as evidenced by the numerous newspaper and business magazine articles that flagged and then flogged potential explanations for labor market doldrums. Leading explanations in the press included export of jobs abroad ("outsourcing"); a severe mismatch between workers' skills and skills required for new jobs; rising labor costs, especially for health insurance and contributions to retirement funds; mis-measurement of employment trends; permanent substitution of capital for labor in key industries; a never-ending ability to find efficiency and process improvements that enabled companies to meet demand without hiring; and lingering uncertainty

about geopolitical and economic prospects.

While all of these explanations have some basis in fact, and some are painfully real to businesses and employees in certain sectors, most fall short of the mark. At present, we are taking some comfort in the fact that our best explanations—some combination of uncertainties and the continued ability to achieve process improvements—are transitory and imply that labor market weakness is transitory as well. We are heartened by recent indications that hiring is improving. As a result, we expect that, as firms become more certain that solid economic growth is here to stay, hiring will resume, and productivity growth will recede from its very high levels.

One thing of which we can be confident is that the dynamic U.S. economy will contin-

our 2003 annual economic conference focused on “behavioral economics.” This strand of economics questions many of the underpinnings of standard economic theory, including how consumers and businesses respond to changes in the economic environment. It is probably a bit early to expect direct application of the insights from behavioral economics to monetary policymaking. But we believe that by expanding the set of viewpoints that we bring to analyzing the macroeconomy, we stand a better chance of detecting and making sense of new developments as they inevitably occur.

As we seek to better understand the evolving economy, we expect to benefit from listening to the public about their real-world experience of economic change, and we hope to share with them our insights about its conse-

**As the economy transforms itself  
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ue to change. In part, changes will be impelled by the underlying competitive drive that is a hallmark of our economy. As the economy transforms itself yet again, we will be confronted with new and challenging questions about how best to conduct monetary policy. In recognition of that likelihood,

quences for policymaking. In so doing, we best position ourselves to push out the frontiers of research and to contribute creatively and effectively to the formation of monetary policy.