Federal Reserve Bank of Cleveland

1999 Annual Report

Theory Ahead of Rhetoric: Economic Policy for a "New Economy"

The Federal Reserve System is responsible for formulating and implementing U.S. monetary policy. It also supervises banks and bank holding companies, and provides financial services to depository institutions and the federal government.

The Federal Reserve Bank of Cleveland is one of 12 regional Reserve Banks in the United States that, together with the Board of Governors in Washington, D.C., comprise the Federal Reserve System.

The Federal Reserve Bank of Cleveland, including its branch offices in Cincinnati and Pittsburgh and its check processing center in Columbus, serves the Fourth Federal Reserve District (Ohio, western Pennsylvania, the northern panhandle of West Virginia, and eastern Kentucky.

It is the policy of the Federal Reserve Bank of Cleveland to provide equal employment opportunities for qualified persons regardless of race, creed, color, national origin, age, gender, or disability.

This annual report was prepared by the Corporate Communications & Community Affairs Department and the Research Department of the Federal Reserve Bank of Cleveland.

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The annual report essay is also available electronically through the Cleveland Fed's home page on the World Wide Web: *http://www.clev.frb.org*.

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Federal Reserve Bank of Cleveland

1999 Annual Report

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President's Foreword

Few years reflect as much unity of purpose as did 1999. In the year just past, one objective stood out as the Federal Reserve's single most important: managing the century date change successfully. As we headed toward this unprecedented event, we knew that the integrity and trust we've gained through years of experience depended on our readiness.

The Federal Reserve Bank of Cleveland geared virtually all of its operations in 1999 around achieving this objective. The multi-year Y2K project, which culminated in 1999, involved preparing our own systems and operations and ensuring that our customers and the financial institutions we supervise were prepared as well. Considerable time and resources were dedicated to maintaining public confidence in our nation's banking system. And, throughout 1999, much energy was focused on finalizing our contingency plans and managing the transition period.

Thanks to the tireless efforts of our dedicated employees, the Year 2000 rollover was a complete success for our Bank, the Federal Reserve System, the banking industry, and our country. Because we were so well prepared for this unprecedented event, those minor problems that did arise were handled quickly and skillfully. All of our efforts in terms of testing and preparing our own services and systems meant there was no uncertainty about what to do when even a minor glitch occurred.

As we and the entire financial services industry geared up for the century date change, a related development was also in the limelight: the re-examination of our industry's very structure. Throughout 1999, we followed the progression of a major piece of banking legislation, the Gramm–Leach–Bliley Act, which Congress passed in November. This legislation, long in the making, overhauled the banking and financial services industries by removing the legal barriers that prevented mergers between such businesses as banking, securities underwriting, venture capital, insurance, and real estate. Depository and nondepository institutions alike can now reorganize and take advantage of new business areas, and thus new revenue streams, that were formerly off limits.

Financial modernization has many far-reaching implications that will contribute to the rapid pace of change that has characterized our industry for a number of years. Along with new privileges, banking organizations will find they have new challenges, too. The separation between banking and commerce will grow murkier, as financial institutions come to play an even greater role in our economy's development. These institutions must also come to terms with managing new and more complex risks.

David H. Hoag, deputy chairman; Sandra Pianalto, first vice president; G. Watts Humphrey, Jr., chairman; and Jerry L. Jordan, president.

The Gramm–Leach–Bliley Act also creates new responsibilities for the Federal Reserve. As the umbrella supervisor of the new financial holding companies created by the Act, we will provide the needed oversight to all financial organizations and their affiliates, and ensure that institutions are managing risk appropriately. We'll also develop new rules, in partnership with other federal agencies, to govern such issues as consumer privacy and community reinvestment practices.

As of this writing, many of the details required to implement the provisions of the Act have not been finalized, and the various agencies charged with implementing it, including the Federal Reserve, will need to cooperate to fill in the fine points. Based on our past successes, I am confident that we will find common ground in interpreting the issues that remain. While the law represents a broad compromise reached by several different entities, we believe it holds much promise for the industry. How the industry will evolve in light of these new opportunities remains to be seen.

The spirit of modernization, so evident this year in our dealings with the industry and the public at large, also pervaded many of our internal functions. As always, we remain committed to finding and providing new efficiencies in our nation's payments system. In 1999, the Federal Reserve Bank of Cleveland took a sizable step in this direction by leading efforts to revamp operations in our largest priced-service area: check processing.

The Check Modernization Project is a multi-faceted, Systemwide initiative designed to reduce the cost of Federal Reserve check services, speed the distribution of new products, further automate our check services, and improve overall service quality. The project will provide new efficiencies, not only in our paper-based check processing operation, but also in the workings of our various electronic check products and services. Under the largest component of the project, a standardized software platform will be established for all 45 of the System's check processing sites. This enhancement will serve as a natural launching pad for revamping such related services as check imaging, adjustments, and electronic delivery.

The lion's share of the planning and conceptualizing behind the Check Modernization Project took place in 1999 under the direction of the Cleveland-based Retail Product Office staff. In 2000 and beyond, we will continue our leadership role by managing the implementation of these state-of-the-art systems for the entire Federal Reserve System.

Another topic of discussion throughout 1999 has been our economy's unbridled growth, which has co-existed with record-low inflation and unemployment levels. The American economy is stronger than ever, and no one could have predicted that our growth would have lasted for nine years, or that it would have been characterized by a virtual lack of inflation. For 1999, unemployment, at 4.2 percent, and inflation, at just over 2 percent, were at their lowest levels in more than 30 years. Overall economic growth once again exceeded 4 percent. For many economists, the inability to predict such circumstances has been a humbling experience that has led to much debate and many questions. But it may well be that too much emphasis is placed on forecasting and "managing" economic growth.

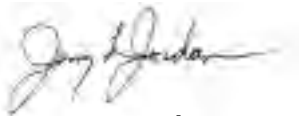
This year's essay examines the historical evolution of the idea that monetary policy should be geared principally to control economic growth, and thereby, also control inflation. We think that this approach to monetary policy has led to several unfortunate consequences, not the least of which is bad rhetoric regarding what monetary policy can and cannot do. We urge a reconsideration of the issue and suggest an alternative to the traditional demand management framework.

We could not have accomplished all that we have in 1999 without the guidance provided by the directors of our Cincinnati, Cleveland, and Pittsburgh offices, and the members of our business and community bank advisory councils. We especially want to thank those directors who completed their terms of service on our Boards in 1999. For their oversight and valuable contributions we are truly grateful. On our Main Office Board of Directors, G. Watts Humphrey, Jr. (president of GWH Holdings, Inc.), completed his third year as chairman. Mr. Humphrey also served as the chairman of the System's Conference of Chairmen in 1999. Robert Y. Farrington (executive secretary–treasurer, emeritus, of the Ohio State Building and Construction Trades Council) completed his second term as a director in 1999. As chairman of our operations committee, Mr. Farrington also played a key role in overseeing the renovation and building project that took place in 1998.

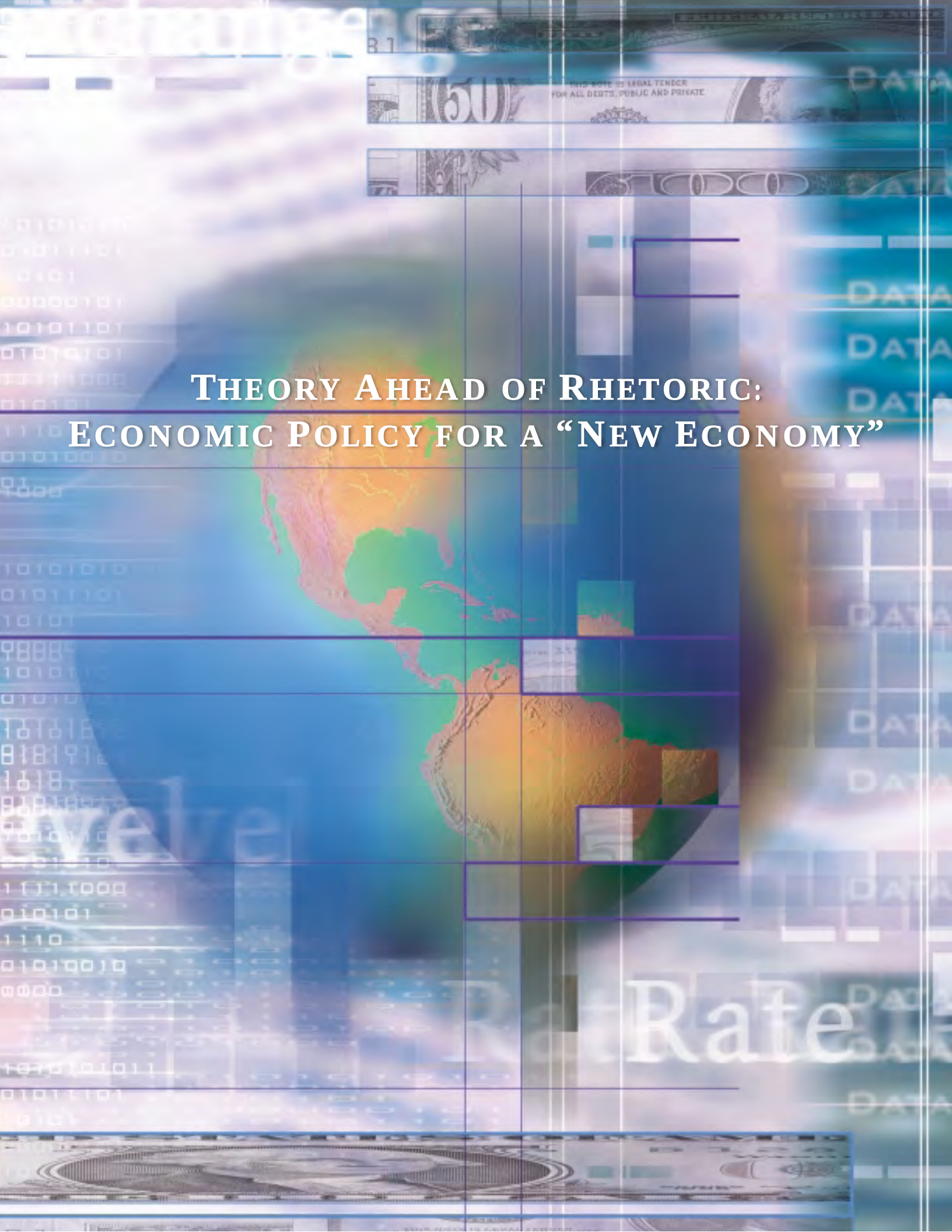
We also thank Phillip R. Cox (president and chief executive officer of Cox Financial Corporation), who completed his second term as a director on our Cincinnati Board. We are pleased that Mr. Cox remains with us, albeit in a new capacity, as a director on the Main Office Board.

A special debt of gratitude goes to Robert W. Gillespie (chairman and chief executive officer of KeyCorp), who finished his third one-year term as our Federal Advisory Council Representative. During 1999, Mr. Gillespie also served as chairman of the Federal Advisory Council. His insight and expertise as well as the valuable contributions of all of our departing board members will be missed.

In addition, I would like to express my sincere appreciation to the officers and staff of the Federal Reserve Bank of Cleveland, for their extraordinary efforts throughout 1999. Preparing our Bank and depository institutions for the century date change was a challenging task, requiring countless hours of work and unparalleled dedication. Remarkably, we were able to handle this extraordinary responsibility and still accomplish many other significant objectives. The Bank is well positioned to fulfill its mission with distinction in the 21st century.



Jerry L. Jordan
President



THEORY AHEAD OF RHETORIC: ECONOMIC POLICY FOR A "NEW ECONOMY"

Our nation's economic performance during the current expansion has confounded the experts since it began in 1991. From the outset, when economic growth compared poorly to a typical recovery, to the end of 1999, when real GDP increased at a phenomenal 7 percent annual rate, the economy's growth path has been a source of continual surprise. By conventional yardsticks, this expansion rivals that of the 1960s for growth in economic prosperity, and now exceeds it in sheer length.

What accounts for the U.S. economic miracle? The end of the Cold War? The high-tech boom? Brilliant economic policy? Or simply luck, perhaps? Economists, historians, and political scientists will undoubtedly analyze the period and make their attributions. But this essay claims a more modest objective. We suggest that the past decade is a telling reminder of how little economists actually know about managing the business cycle and, ironically, how much they know about promoting economic welfare.

Advances in economic theory support the growing skepticism over the efficacy and desirability of economic policies geared toward smoothing what has come to be known as "the business cycle." This means much more than to say that fine-tuning the economy is difficult. Indeed, the most important theoretical developments of the past 20 years call into question the notion that substantial benefits are to be had from policies aimed at smoothing such economic fluctuations. And the costs of trying to do so may be great if stability comes at the price of higher, unpredictable inflation.

But the language of monetary policy is replete with concepts and empirical constructs inherited from an era when damping business-cycle fluctuations was the *sine qua non* of successful economic policy. The deep theoretical weaknesses of these ideas—embodied in notions such as "potential" output, "the" noninflationary rate of unemployment, growth "speed limits," and the like—have manifested themselves with a vengeance over the past decade, prompting casual observers to hail the so-called "New Economy." In fact, it's not that the economy is new, but that the policy lexicon is old. That is, the puzzling evolution of the current expansion is not a failure of economic theory, but of economic *rhetoric*.

Looking ahead, economic policymakers will face new and different obstacles to promoting the nation's welfare. To make the most of these challenges, they will need to look at the world through a different filter and adopt a new language that is consistent with that perspective.

Great Expectations

According to every conventional measure, the U.S. economy is operating above its potential. And this, as we are told, is not a good thing. An economy that exceeds its potential is "overheated"—a situation that causes inflation to rise and, ultimately, the economy to slump. The Bureau of Labor Statistics tells us that more than 2,500,000 net new jobs were generated in 1999, and the rate of joblessness fell to a 30-year low. Bad news. The stock market is high, capital is flowing into the nation from around the world, and wages are rising. Bad, bad, and very bad.

At what point did economists begin to regard bad news as—well, bad news—and good news as just bad news waiting to happen? Where did this philosophy of pessimism come from? It is, we believe, a legacy of the 1930s, the Great Depression. True, only a fraction of our population can remember this unfortunate time in our economic history, but the economic philosophies and policy prescriptions born of that era remain with us today.

The trauma of the Depression left an indelible mark on macroeconomic policy. By the time Arthur Burns and Wesley Mitchell published their landmark study of business-cycle measurement in 1946, the intellectual tradition of postwar macroeconomics was well entrenched.[1] Central to this tradition, which persisted for at least 30 years, is the notion that economic fluctuations are simply smaller versions of the dramatic boom–bust pattern of the 1920s and 1930s. According to this theory, such fluctuations are, by nature, economic defects, and the goal of economic policy is their elimination.

This was a significant deviation from the classical tradition articulated by Adam Smith in his 1776 work, *An Inquiry into the Nature and Causes of the Wealth of Nations*, which sought to develop a basic understanding of the sources of national prosperity and the institutional policies that would maximize the general welfare.

It is arguable that Congress, by creating the Federal Reserve System, expected its central bank to move beyond the laissez-faire mind-set of the classical tradition. And indeed, the laws defining the goals of the U.S. central bank have been reformed several times since 1913. But early in its history, the Federal Reserve's role was strictly to provide a financial infrastructure that would facilitate a national payments system. Its mission, described in the original Federal Reserve Act, was "to furnish an elastic currency, to afford the means of rediscounting commercial paper, to establish a more effective supervision of banking in the United States, and for other purposes."

This language clearly contemplates that the Reserve Banks should have the means and mission to address episodes of financial distress, and perhaps to provide some economic stability, at least as it concerns banking and other monetary crises. But this is a decidedly different kind of economic stabilization than what has come to be characterized as monetary policy today — the manipulation of national spending. In fact, prior to the 1920s, the dominant theory of monetary policy was the so-called "real-bills doctrine," which prescribed that growth in the money stock should passively accommodate the expansion and contraction of commercial activity. Modern stabilization policy was not envisioned, if only because the framework for thinking about such a mandate had not been developed.

Fear and Loathing on the Business-Cycle Trail

> ***"In the long run, we are all dead. Economists set themselves too easy, too useless a task if in the tempestuous seasons they can only tell us that when the storm is long past the ocean will be flat."***
>
> — John Maynard Keynes[2]

The Depression marked a turning point in the theories used to evaluate the successes and failures of economic policy. The business-cycle models that dominated the policy mind-set of the ensuing decades originated from one of the most influential books of the twentieth century, John Maynard Keynes' *The General Theory of Employment, Interest and Money*, published in 1936.

The problem, as Keynes saw it, is that an economy's equilibrium can be achieved at a less-than-optimal level of employment and production[3]. Keynes turned classical economic theory on its head, arguing that, in the short run, fluctuations in a nation's spending are instrumental in determining its income. Keynes and his disciples proposed economic models in which low levels of spending (or high levels of saving) produced a drop in national output.

Keynes' view of the economy seemed to square with the ghastly economic performance of the 1930s. Perhaps even more important, the Keynesian model offered a solution that other theories could not provide so confidently. Keynes conjectured that nations could lessen the severity of economic downturns by prescribing government fiscal policies, like reduced taxation or increased government spending, that encouraged the expansion of demand. Stimulate demand, and production and income are sure to follow. Keynes' solution created a revolution among the era's young economists, who would play important and decisive roles in shaping national economic policies for the next 40 years.[4]

The logic of Keynes' framework would eventually be understood as applying equally to "overly" good times and to overly bad. If economic fluctuations result from imperfections in the operation of the economy, then smoothing all fluctuations would be a desirable policy goal. In other words, "appropriate" economic policy embodies the goal of eliminating deviations from the trend growth rate.

Aspiring to Be Average

Numerical estimates of a nation's economic potential began as simple trend lines drawn, after the fact, through the ups and downs of the aggregate data, as Paul Samuelson discusses in his classic college textbook on economics:

> *"If we draw a smooth trend line or curve, either by eye or by some statistical formula, through the growing components of NNP [net national product], we discover the business cycle in the twistings of the data above and below the trend line."*[5]

In 1961, a novel technique for estimating the economy's potential was developed by Arthur M. Okun and later was given official sanction by the President's Council of Economic Advisers. Okun's procedure connected the "problem" of the business cycle to the "problem" of unemployment. He conjectured that "a 4 percent unemployment rate is a reasonable target under existing labor market conditions," and estimated that for every percentage point the unemployment rate rises above this optimal level, the economy (measured by real GNP) will fall 3 percent below its potential. Using this three-to-one rule, Okun argued that policymakers could translate the rate of joblessness into a measure of actual output in relation to national potential.[6]

At about the same time Okun was giving policymakers a target for national economic performance, a New Zealander named Alban W. Phillips was documenting a negative correlation between the rate of joblessness and another undesirable economic condition, inflation. In what is now known as the "Phillips curve," economists observed that underperforming economies tend to see inflation fall, while overperforming economies see inflation rise.[7] Eventually, Okun's and Phillips' ideas would be connected and captured in what economists call the "nonaccelerating inflation rate of unemployment," or NAIRU. According to this labor-market indicator of potential GDP, sustained movements in measured unemployment below the NAIRU portend accelerating prices, while unemployment rates above the NAIRU precede disinflation.

The Machines of Alban W. Phillips

In approach, economic research looks much like research in any science; the difference is in the nature of the experiments. Experiments in physics or biology can often be repeated in a controlled environment, allowing the researcher to make systematic changes and observe the resulting outcomes. Economists have only the laboratory of the marketplace, where experimentation can be exceptionally costly.

Think about the following policy-related questions: Should the Social Security surplus be used to pay down the national debt? Does the minimum wage cause unemployment? How much money stabilizes the price level? We make our choices and record what happens. But such experimentation is a dangerous way to learn how policy choices affect the nation's welfare. Therefore, economists must rely on experimentation in a laboratory economy, or a model of the economic world we hope to influence.

A model can take many forms. Some models are mathematical constructs, some are narrative, some are diagrams. And some are physical, like the machines of Alban W. Phillips (of "Phillips curve" fame) who was, by his own admission, not an expert mathematician. He had difficulty handling the differential equations characteristic of the Keynesian economic models of the day. Phillips, trained as an electrical engineer, felt it was useful to build models that were "clearly visible and comprehensible to an onlooker."[10] His novel solution was to construct hydraulic machines with transparent tanks and tubes, regulated by valves.

The Costly Experiment

A major problem with the use of potential output and NAIRU as the basis for economic policy emerged in the 1960s. In 1964, despite three years of strong growth (averaging about 4 percent annually after inflation), the Council of Economic Advisors estimated that the economy was operating well under its "potential." In its 1964 report, the Council claimed that "only a significant acceleration of expansion can enable the Nation to make full use of its growing labor force and productive potential."[8] The report proposed a major tax reduction program that "would add $30 billion to total output and create 2 to 3 million extra jobs" and called for monetary policy to work in conjunction with the fiscal authority to stimulate demand conditions.

By 1966, the Council reported that "the economy [had] caught up with its potential" and heralded the closing of the gap as "a great achievement."[9] But in subsequent reports, the Council noted that the economy had probably overshot its potential in mid-1965 and was operating above it during the latter half of the 1960s. That view was based not only on GNP statistics, but also on the unexpected acceleration of inflation during 1968–69.

During the first two years of the 1970s, attempts were made to curb inflation by restraining the demands that were presumably pushing the economy above its potential. But those steps proved less effective than hoped. In 1971, inflation was slightly *above* its level of two years earlier and the unemployment rate nearly doubled. In August 1971, President Nixon took more drastic measures by imposing a 90-day freeze on wages and prices, followed by still other price-control measures that continued through the spring of 1974. In the end, the dismal economic performance of the 1970s—a succession of fits and starts leading to ever-higher unemployment and inflation—introduced the term "stagflation" into public discourse.

The lifeblood of his economy was money, which flowed as water through the complicated apparatus. Price changes were recorded by floats that varied with the water levels and were sometimes marked by pens that traced out the fluctuations as the machine operated. Demand conditions in various markets could be altered by the shape and capacity of tanks representing sectors of the economy. Flows around the machine could be calibrated so that the model gave "time-series" readings. Phillips' machines could record a chain of events leading from stimulus to response, much the same way that many forecasting models work today.[11]

Phillips' visible model of the economic world—a transparent hydraulic machine.

What went wrong? Economists now accept that the policy prescriptions suggested by the Phillips curve failed to account for the important role that *expectations* play in the observed inflation-unemployment trade-off. As inflation's trend escalated, people changed their behavior. The patterns in the data that economists had used to derive their trade-off theories — and that policymakers had relied on in responding to economic conditions — did not remain stable when inflation expectations changed. Specifically, the lower rates of joblessness that policymakers believed could be "bought" with higher inflation were not realized for long, as employees adjusted their wage demands upward to compensate for their rising cost of living.

It became clear — painfully so — that there is no fixed mapping of the rates of unemployment and inflation that is independent of the public's inflationary expectations. In the 1975 *Economic Report of the President*, the Council declared that "In the long run…there would not appear to be a mechanism linking the rate of unemployment to any one rate of stable wage or price increase."[12] Although this statement seems, in isolation, to cast off the Okun's law–NAIRU–Phillips curve troika as a meaningful policy guide, that certainly wasn't the result. This passage laments not the Phillips-curve framework but the inability to use it better.

This belief persists today. A growing number of economists are coming to the conclusion that the policy failures of the late 1960s and 1970s (and perhaps other episodes) can be attributed less to the inadequacy of the framework than to the inherent uncertainty of determining the economy's potential.[13] To many, the undisputed improvement in monetary policy from the 1980s through the 1990s was the happy consequence of simply learning the economy's true potential.[14] The promise for sustaining this improvement, then, was to be found in better statistical techniques and enhanced information collection.

Let There Be Cheapness

When the Romans were unable to plunder the wealth of others or to raise sufficient revenues from taxation to support the enormous costs of the bureaucracy needed for world domination, they resorted to debasing their money supply. According to one estimate, from Alexander Severus (222) through Claudius Victorinus (268), the percentage of silver in Roman coins dropped from 35 percent to 0.02 percent, an inflation of 15 percent per year.

Diocletian (284–305) instituted a number of reforms, realigning the Empire's management structure (he named three associate emperors), reorganizing the civil service, overhauling the tax system, and reforming the currency.

Silver Content of Roman Coin of Denomination

ISSUING AUTHORITY	PERCENT SILVER
Nero 54 A.D.	94
Vitellius 69 A.D.	81
Domitian 81 A.D.	92
Trajan 98 A.D.	93
Hadrian 117 A.D.	87
Antoninus Pius 138 A.D.	75
Marcus Aurelius 161 A.D.	68
Septimius Severus 193 A.D.	50
Elagabalus 218 A.D.	43
Alexander Severus 222 A.D.	35
Gordian 238 A.D.	28
Philip 244 A.D.	0.5
Claudius Victorinus 268 A.D.	0.02

There is another interpretation: Potential output or the NAIRU cannot be made more useful concepts, even with better measurement or better econometrics. The policy successes of the past two decades have not been the result of more precise knowledge of NAIRU or potential GDP, but rather from a more determined concentration on long-term goals and a deeper appreciation of the dynamic forces driving modern economies.

Losing the Forest amid the Trees

An intriguing analogy to the postwar history of U.S. monetary policy can be found in the Forest Service's war against fires. It began with a simple enough question: How do we reduce the number of forest fires? Many solutions, each having a measurable degree of success, resulted. Educate the public about the harm caused by forest fires, put more resources into fighting forest fires, and encourage the development of fire-retarding technologies. And fires were, in fact, reduced — initially.

Unfortunately, it turned out that reducing forest fires had the unexpected consequence of allowing underbrush to grow more dense, creating an unnatural change in the ecological balance of the forests. Fires are a naturally occurring phenomena that serve to clean up the accumulated debris on the forest floor, thereby creating opportunities for wildlife and growth that would otherwise have been squeezed out by the heavy undergrowth.

Diocletian's money-supply reform reestablished a much higher metal content for gold and silver coins. However, he appears to have also minted a series of bronze coins that he promptly began to debase as a source of revenue. Accordingly, the more precious gold and silver monies quickly disappeared from circulation, driven out by bronze.[15] In the end, he was left with the same inflationary rise in prices that had troubled emperors before him.

In 301, Diocletian commanded that "there shall be cheapness": "Unprincipled greed appears wherever our armies, following the commands of the public weal, march, not only in villages and cities but also upon all highways, with the result that prices of foodstuff mount not only fourfold and eightfold, but transcend all measure. Our law shall fix a measure and a limit to this greed."

While Diocletian's policy answered the question he had asked, it had the unexpected result of creating shortages. Debasing the money, along with enormous demands for commodities by the military, was the root cause of the rapid price increases that Diocletian saw. His ceilings merely covered up that reality and, in so doing, unintentionally produced even larger problems for his "administration."

An account by Lactantius, an early Christian theologian, described the result of Diocletian's policy this way;

"When by various extortions he had made all things exceedingly dear, he attempted by an ordinance to limit their prices. Then much blood was shed for the veriest trifles: men were afraid to expose anything for sale and the scarcity became more excessive and grievous than ever until in the end the ordinance having proved disastrous to multitudes was from mere necessity annulled."[16]

Even more ironic, the excess buildup of debris increased the severity of fires when they did occur, so that the occasional fire was more catastrophic than the smaller fires the Forest Service had hoped to contain. In the end, the well-intended policy considered too narrow a model of the forest. Instead of asking how to prevent forest fires, the Forest Service should have asked, what is the function of fires in the forest ecology?

The lesson of this example is that it is easy to lose the forest amid the trees—in this case, literally. It is absolutely understandable that the dominant question to come out of the Depression would be, how do we avoid a catastrophic collapse of economic activity? Likewise, it was reasonable that the creation of the Federal Reserve System would be motivated by the question, how do we avoid a catastrophic collapse of the financial sector?

However, as we understand them today, these two questions are likely related. In an important and influential paper published in 1983, Ben Bernanke of Princeton University proposed that the systemic collapse of financial intermediation converted what might have been a significant, but otherwise unexceptional, downturn into the Great Depression.[17] Embracing this view leads one to ask about reforming the institutional structure of financial institutions and markets, questions far removed from that of how to eliminate the business cycle as it has been understood since Keynes.

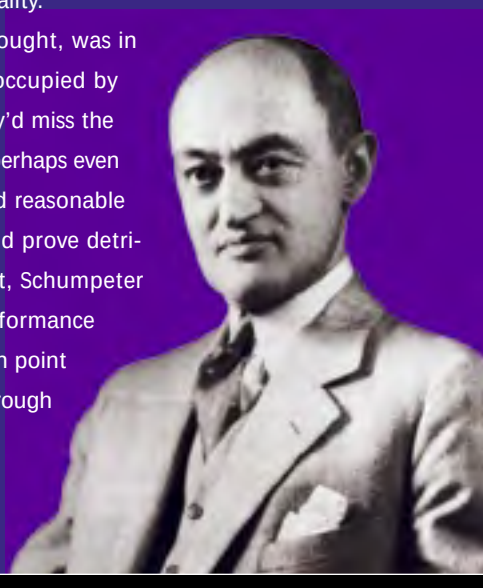
Losing Sight of the Long Run—The Case of Creative Destruction

The importance of viewing economies as dynamic, organic processes, understood only by considering the whole of their many parts over time, owes much to the work of economist Joseph Schumpeter. In his 1950 book, *Capitalism, Socialism, and Democracy*, Schumpeter coined the phrase "creative destruction," describing capitalism as a system "that incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one." For Schumpeter, "This process of Creative Destruction is the essential fact about capitalism."

Schumpeter took aim at his more orthodox colleagues, stressing the evolutionary character of capitalism as primary. He was distressed by the "rigid pattern of invariant conditions, methods of production, and forms of industrial organization… that practically monopolizes attention" in the profession. For Schumpeter, this sterile and static "textbook picture" missed the most important fact of capitalism. The strength of capitalism, in his view, was its continual change.

Some had suggested that capitalism would ultimately collapse under its own weight, believing that as an economy matured, it would increasingly come to be characterized by forms of imperfect and less-than-optimal competition. Schumpeter, however, thought that a capitalist economy, in a very real sense, never matured or settled into that sort of equilibrium. Instead, the economy would constantly be bouncing from one equilibrium path to another, all the time remaking itself. Accordingly, he viewed the misgivings of market critics as misplaced, and their ideas as mere theoretical constructions with very little resonance in reality.

The danger, Schumpeter thought, was in economists becoming so preoccupied by current circumstances that they'd miss the larger, more dynamic picture, perhaps even suggesting things that seemed reasonable in the short run but that would prove detrimental in the long run. In fact, Schumpeter counseled us to judge the performance of an economy not at any given point but "over time, as it unfolds through decades or centuries."



In fact, the post-Depression view that ups and downs in economic activity are, by and large, pathological, begged the real question: What is the role of business-cycle fluctuations in the macroeconomic ecology? It would be some 40 years before economists would address this question in earnest, but attendant on its answer came a discernible shift toward the establishment of long-term goals for monetary policy.

Lessons in Long-run Policy Dynamics

If you ask us to name the three theoretical developments that have had the most significant influence on economic policy thinking in the past 30 years, we answer: rational expectations, time inconsistency, and "real" business cycles.

The first two would raise few eyebrows among academics. Rational expectations, brought to modern macroeconomics by Nobel laureate Robert E. Lucas, Jr., introduced forward-looking behavior into policy discussions in a formal and systematic way. This sounded the death knell for the Phillips curve as an exploitable tool of policy and spawned a rich, varied literature on the vital role of expectations in the dynamics of economic activity.

Related to rational expectations, time inconsistency predicted adverse consequences from economic policies that failed to commit to clear and consistent long-term objectives. This was an old but underappreciated principle that applied to the formulation of economic policies. Because of dynamic rational expectations, short-run policies that, individually, appear to be reasonable (if not optimal) in the short run, are decidedly less than optimal when considered over time.

These two contributions emphasize the importance of rules, as opposed to discretion, in economic policy. But not any rule will do. The policy rule must commit to future actions today and the policymaker must be held accountable to them. In the case of monetary policy, the problem of time inconsistency implies that the monetary authority should emphasize transparent, credible policies regarding the future purchasing power of money.[18] Without commitment, the rule on which inflation expectations are formed is not credible, since the public knows that at any point, the monetary authority will be tempted to renege on its long-run promise in the interest of short-run expedience.

Clearly these ideas have taken hold, and they provide much of the current intellectual underpinnings of central banks' behavior all over the world — not least because they explain how policy had previously erred. In the United States, the economic stabilization policies of the 1960s and 1970s which caused instability in the purchasing power of money produced a reduction in the national welfare. Inflation, the nation learned, redistributes wealth capriciously. If the general price level unexpectedly rises because of an excess supply of money, people who made decisions based on the expectation of a stable purchasing power of money lose. Savers come to realize that they lent money at too small a return when they are paid back in dollars that have less purchasing power than before. And employees will regret that their dollar-denominated earnings did not anticipate the drop in the dollar's purchasing power. These are just two examples of the countless bad decisions caused by unexpected inflation.

At this point, the importance of dynamics is revealed as a crucial shortcoming of the original Phillips-curve approach. Losers, it turns out, don't like to lose. Once people have experienced a loss caused by capricious changes in the purchasing power of their money, they take precautions to prevent future losses. That is, they alter their behavior and redirect their resources to protect against losses from future inflation, leaving the economy with fewer resources to devote to production.

These reallocations can take many forms: People may buy land or homes as an inflation hedge, or financial institutions may raise borrowing rates to compensate for the risk associated with the uncertain purchasing power of a dollar. Indeed, *any* decision with a dollar-denominated outcome will involve an added cost associated with uncertainty about the future purchasing power of money. In short, knowing that the purchasing power of a dollar is stable will lead to better allocation of resources than is possible in an environment that suffers from inflation.

The Real-Business-Cycle Approach to Economic Modeling

While the ideas of rational expectations and time inconsistency have had a profound impact on monetary policy over the past two decades, can the same be said of real-business-cycle theory? After all, here is a line of research originating in two articles — Kydland and Prescott (1982) and Long and Plosser (1983) — that pointedly omitted money altogether.[19] That is, these models had no clear role for the monetary authority.

Real-business-cycle theory now refers generically to a class of models in which aggregate outcomes are the sum of the decisions made by individual firms and households operating in fully dynamic environments with explicitly modeled constraints, opportunities, market structures, and coordination mechanisms. These models incorporate money, taxes, and a variety of market frictions and imperfections.[20]

Despite a promising body of research incorporating the older Keynesian notions of market imperfections — sticky prices and such — the lessons of the original real-business-cycle models have survived. These models are still "real" in the sense that their economic fluctuations come from informed decisions of perfectly competitive, efficiently functioning households and businesses as they respond to changes in productivity. Real-business-cycle models can account for the economic patterns we actually observe — large fluctuations in output around a statistical trend. Furthermore, these fluctuations are quantitatively significant, suggesting that the bulk of typical business-cycle fluctuations might best be characterized as the economy's optimal response to random external forces that — fortunate or unfortunate — are not appropriate objects of policy response.

Indeed, the real-business-cycle framework leads to the conclusion that the concept of potential output is hollow. It is always possible to measure some average or trend level of output after the fact. But if one views the path of the economy, approximately and excepting extreme circumstances, as the dynamic unfolding of a sequence of optimal outcomes given the inherited structure of the economy, then actual and potential output become one and the same.

Further theoretical advances have subjected the NAIRU to the same fate as potential output. So-called "search-theoretic" models, of the kind pioneered by Mortensen and Pissarides (1994),[21] generate variations in equilibrium unemployment analogous to output fluctuations in the real-business-cycle tradition, making the notion of NAIRU equally vacuous. As with potential output, it is always possible (after the fact) to correlate *some* level of unemployment with accelerating inflation. But without an explicit description of how economic policies can be used to alter the matching of workers and jobs in the labor market, that correlation is meaningless to economic policymakers.[22]

Alexander Hamilton and Time-Consistent Policy

Anyone who has ever spoken the words "just this once" has probably learned the hard way the problems of a time-inconsistent strategy. Time inconsistency refers to a situation in which what looks like the best decision from moment to moment may not produce the best outcome in the long run. That is, the long-term plans of people and governments often fall apart because people are free to make decisions that offer instant gratification at any point in time. Indeed, time inconsistency is a commonly faced problem in the establishment of economic policy.

After the American Revolution, Alexander Hamilton, as the first U.S. Secretary of Treasury, was given the task of refunding and repaying enormous war debts. In a report to Congress in 1790, the whole expense of the war was estimated to be $135 million. Of this amount, $5 million was owed to foreigners,

Aligning Rhetoric with Reality

A critical feature of the real-business-cycle framework and its offspring is the intentional and explicit connection to the theory of economic growth. The economist or policymaker viewing the world through the lens of dynamic general-equilibrium intuition is never far-removed from the long-run consequences of his or her reasoning. And this is the true legacy of the empirical failure of traditional postwar thinking and the attendant theoretical advances in macroeconomics from the early 1970s on: The breakdown of support for activist stabilization policies in favor of policies and institutional structures that tether the short-run behavior of policymakers to long-run economic welfare.

That monetary policy can wreak havoc on financial markets and can be a disruptive influence on the economy is unquestioned. This was a hard lesson learned. But whether a central bank can systematically and predictably "create" prosperity is another matter entirely.

This is not to say that monetary policy does not have an important role to play in the economy; but that "good policy" is not synonymous with accurate demand management. An effective policy is one that aims to promote long-run national growth, not one that manages movements around a statistical growth trend.

In the short run, it is important to strike a balance between the quantity of money demanded in the economy and the amount the central bank supplies. Such a balance keeps the purchasing power of money constant. If policy is backed by commitment, thus making it time consistent, the Federal Reserve promotes economic prosperity by reducing the risk associated with dollar-denominated decisions. In so doing, it helps to promote the creation of wealth. While Congress requires the Federal Reserve to promote effectively the goals of maximum employment, stable prices, and moderate long-term interest rates, it does not specify how these objectives are to be accomplished. Over time many Federal Reserve officials have come to regard the attainment of price stability as the most effective means of achieving these legislated goals.

We contend that this perspective has been absolutely pervasive in U.S. monetary policy over the past decade. The resolutely forward-looking focus on *potential* price pressures reflects the increasingly popular view that maintaining a relatively stable and predictable purchasing power of money is the primary welfare-enhancing role of monetary policy. The increasing openness of Federal Reserve decisionmakers — reflected in announced policies aimed at more rapid and transparent dissemination of Federal Open Market Committee decisions — needs to be appreciated in light of the established importance of credibility in the policymaking process. The more frequent unwillingness of policymakers to aggressively respond, in the absence of discernible inflationary pressures, to output and unemployment levels merely because they diverge from presumed estimates of potential and the NAIRU suggests the waning influence of these ideas on the establishment of economic policy.

$17 million was owed for supplies paid by certificates, $92 million was owed for wages and supplies paid for by "cash" redeemable in gold or silver, and $21 million was owed by the states. While it was widely agreed that money borrowed from foreign governments needed to be repaid, many in the new Congress, including Thomas Jefferson and James Madison, argued against the repayment of some obligations to avoid the difficulties that increased taxation would cause.

But Hamilton was committed to establishing the government's creditworthiness. He knew the dangers of defaulting on debt, or implicitly defaulting by engineering inflation. Hamilton understood that by taking the expedient course and defaulting on some holders of the war debt, Congress would cast doubt on the trustworthiness of the new government to honor its debts. In so doing, they would inadvertently drive up the cost of credit by reducing the appeal to investors that the nation so desperately needed. In other words, his model was time consistent.

Hamilton felt so strongly about his position that he agreed to endorse a plan for moving the nation's capital from New York to Washington, D.C., if his debt repayment plan passed in Congress. Hamilton's plan did pass, the young nation established its creditworthiness, and to this day the seat of the U.S. government shuts down if it snows more than an inch.

If the principles guiding monetary policy have changed, why do some analysts still talk about "overheating," "growth above potential," unemployment rates that are "too low," and "wage pressures"? One explanation is that our assertion is wrong, and old-style stabilization policy is still the order of the day, at least for some policymakers.

Another explanation is that the *rhetoric* of monetary policy has failed to keep pace with theory and practice. Although policymakers may have conquered the fine-tuning impulse, they have yet to fully abandon the language that accompanies it. In a world where expectations matter, the language of policymakers can have consequences. As we confront the real challenges that financial innovation, rapid globalization, and the "new economy" will bring, these are complications we can ill afford. It is time to align rhetoric with reality.

Footnotes

1. Arthur F. Burns and Wesley C. Mitchell, *Measuring Business Cycles* (New York: National Bureau of Economic Research, 1946).
2. John Maynard Keynes, *A Tract on Monetary Reform* (London: MacMillan, 1924).
3. The term "equilibrium" in this context is somewhat different from its more familiar meaning of an economic outcome generated from competitive, efficient resource markets. Here, equilibrium is merely the short-run outcome in an economy that need not correspond with its long-run (steady-state) value.
4. See John Kenneth Galbraith, *The Age of Uncertainty* (Boston: Houghton Mifflin, 1977), pp. 216-26.
5. From Paul A. Samuelson, *Economics* (New York: McGraw Hill, 1951), p. 253. Net national product was a commonly used measure of national production, but similar in spirit to the gross domestic product measure used today.
6. Okun's formula for potential GNP is $P = A[1 + 0.03(U-4)]$, where P is potential GNP, A is actual GNP, and U is the percentage of civilian unemployment. See Arthur M. Okun, "Potential GNP: Its Measurement and Significance," American Statistical Association, Proceedings of the Business and Economic Statistics Sections, Washington, D.C., 1962.
7. A paper published in 1926 by the famous Yale economist Irving Fisher is now credited with observing the link between unemployment and price growth for the U.S. economy. See "A Statistical Relation between Unemployment and Price Changes," *International Labor Review* (June 1926), reprinted as "I Discovered the Phillips Curve," *Journal of Political Economy*, vol. 81, no. 2, pt. 1 (March/April 1973), pp. 496-502.
8. *Economic Report of the President*, 1964, p. 37.
9. *Economic Report of the President*, 1967, pp. 44-5.
10. See Alban W. Phillips, "Mechanical Models in Economic Dynamics," *Economica* (August 1950), p. 283. In another surprising connection to Phillips (see footnote 7), machines that are similar in spirit were proposed much earlier in Irving Fisher's 1891 Ph.D. thesis. Fisher's machines solved for equilibrium prices by monitoring rods and floats that fluctuated with the water levels flowing through a system of cisterns connected by rubber tubing.
11. C. Archibald Blyth, "Alban W. Phillips," *The New Palgrave: A Dictionary of Economics*, (London: The Macmillan Press Limited, 1992), p. 857.
12. *Economic Report of the President*, 1975, p. 94.
13. See, for example, J. Bradford DeLong, "America's Peacetime Inflation: The 1970s" in Christina D. Romer and David H. Romer, eds., *Reducing Inflation: Motivation and Strategy* (Chicago: University of Chicago Press, 1997); and Athanasios Orphanides, "Activist Stabilization Policy and Inflation: The Taylor Rule in the 1970s," Federal Reserve Board, Finance and Economics Discussion Series no. 2000-13 (February 2000).
14. See, for example, Thomas J. Sargent, *The Conquest of American Inflation* (Princeton, N.J: Princeton University Press, 1999).
15. The principle that bad money tends to drive away good is what economists call "Gresham's Law."
16. From H. Michell, "The Edict of Diocletian: A Study of Price Fixing in the Roman Empire," *Canadian Journal of Economics and Political Science*, vol. 13, no. 1 (February 1947), pp. 1-12.
17. Ben S. Bernanke, "Nonmonetary Effects of the Financial Crisis in Propagation of the Great Depression," *American Economic Review*, vol. 73, no. 3 (June 1983), pp. 257-76.
18. Although the idea of time inconsistency has a long history, Finn E. Kydland and Edward C. Prescott are usually credited with bringing the notion to prominence in modern discussions of economic policy. See "Rules Rather Than Discretion: The Inconsistency of Optimal Plans," *Journal of Political Economy*, vol. 85, no. 3 (June 1977), pp. 473-91. The first specific application to monetary policy is generally attributed to Robert J. Barro and David B. Gordon, "Rules, Discretion and Reputation in a Model of Monetary Policy," *Journal of Monetary Economics*, vol. 12, no. 1 (July 1983), pp. 101-21, and "A Positive Theory of Monetary Policy in a Natural Rate Model," *Journal of Political Economy*, vol. 91, no. 4 (August 1983), pp. 589-610.
19. Finn E. Kydland and Edward C. Prescott, "Time to Build and Aggregate Fluctuations," *Econometrica*, vol. 50, no. 6 (November 1982), pp. 1345-70, and John B. Long, Jr. and Charles I. Plosser, "Real Business Cycles," *Journal of Political Economy*, vol. 91, no. 1 (February 1983), pp. 39-69.
20. For a spirited presentation of this point of view, see Randall Wright, "Search, Evolution, and Money," *Journal of Economic Dynamics and Control*, vol. 19, no. 1/2 (January/February 1995), pp. 181-206.
21. Dale T. Mortensen and Christopher A. Pissarides, "Job Creation and Job Destruction in the Theory of Unemployment," *Review of Economic Studies*, vol. 61, no. 3 (July 1994), pp. 397-415.
22. For a complete discussion of this issue, see Richard Rogerson, "Theory Ahead of Language in the Economics of Unemployment," *Journal of Economic Perspectives*, vol. 11, no. 1 (Winter 1997), pp. 73-92. The similarity to the present article's title is not coincidental.

FINANCIAL CONTENTS

January 1, 2000

To the Board of Directors of the Federal Reserve Bank of Cleveland:

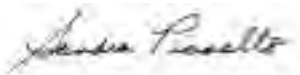
The management of the Federal Reserve Bank of Cleveland (FRB Cleveland) is responsible for the preparation and fair presentation of the Statement of Financial Condition, Statement of Income, and Statement of Changes in Capital as of December 31, 1999 (the "Financial Statements"). The Financial Statements have been prepared in conformity with the accounting principles, policies, and practices established by the Board of Governors of the Federal Reserve System and set forth in the Financial Accounting Manual for the Federal Reserve Banks and, as such, include amounts, some of which are based on judgments and estimates of management.

The management of the FRB Cleveland is responsible for maintaining an effective process of internal controls over financial reporting, including the safeguarding of assets as they relate to the Financial Statements. Such internal controls are designed to provide reasonable assurance to management and to the Board of Directors regarding the preparation of reliable Financial Statements. This process of internal controls contains self-monitoring mechanisms, including, but not limited to, divisions of responsibility and a code of conduct. Once identified, any material deficiencies in the process of internal controls are reported to management, and appropriate corrective measures are implemented.

Even an effective process of internal controls, no matter how well designed, has inherent limitations, including the possibility of human error, and therefore can provide only reasonable assurance with respect to the preparation of reliable financial statements.

The management of the FRB Cleveland assessed its process of internal controls over financial reporting, including the safeguarding of assets reflected in the Financial Statements, based upon criteria established in the "Internal Control—Integrated Framework" issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Based on this assessment, the management of the FRB Cleveland believes that the FRB Cleveland maintained an effective process of internal controls over financial reporting, including the safeguarding of assets as they relate to the Financial Statements.

President & Chief Executive Officer
Federal Reserve Bank of Cleveland



First Vice President & Chief Operating Officer
Federal Reserve Bank of Cleveland

Report of Independent Accountants

PricewaterhouseCoopers L.L.P.

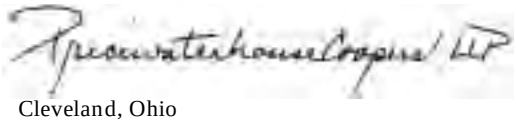
To the Board of Directors of the Federal Reserve Bank of Cleveland:

We have examined management's assertion that the Federal Reserve Bank of Cleveland ("FRB Cleveland") maintained effective internal controls over financial reporting and the safeguarding of assets as they relate to the Financial Statements as of December 31, 1999, included in the accompanying management assertion.

Our examination was made in accordance with standards established by the American Institute of Certified Public Accountants, and accordingly, included obtaining an understanding of internal controls over financial reporting, testing, and evaluating the design and operating effectiveness of internal controls, and such other procedures as we considered necessary in the circumstances. We believe that our examination provides a reasonable basis for our opinion.

Because of inherent limitations in any internal controls, misstatements due to error or fraud may occur and not be detected. Also projections of any evaluation of internal controls over financial reporting to future periods are subject to the risk that internal controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

In our opinion, management's assertion that the FRB Cleveland maintained effective internal controls over financial reporting and over the safeguarding of assets as they relate to the Financial Statements as of December 31, 1999, is fairly stated, in all material respects, based upon criteria described in "Internal Control—Integrated Framework" issued by the Committee of Sponsoring Organizations of the Treadway Commission.



Cleveland, Ohio
March 3, 2000

Report of Independent Accountants

PricewaterhouseCoopers L.L.P.

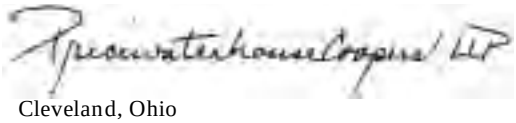
To the Board of Governors of the Federal Reserve System
and the Board of Directors of the Federal Reserve Bank of Cleveland:

We have audited the accompanying statements of condition of the Federal Reserve Bank of Cleveland (the "Bank") as of December 31, 1999 and 1998, and the related statements of income and changes in capital for the years then ended. These financial statements are the responsibility of the Bank's management. Our responsibility is to express an opinion on the financial statements based on our audits.

We conducted our audits in accordance with auditing standards generally accepted in the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

As discussed in Note 3, the financial statements were prepared in conformity with the accounting principles, policies and practices established by the Board of Governors of the Federal Reserve System. These principles, policies and practices, which were designed to meet the specialized accounting and reporting needs of the Federal Reserve System, are set forth in the "Financial Accounting Manual for Federal Reserve Banks" and constitute a comprehensive basis of accounting other than accounting principles generally accepted in the United States.

In our opinion, the financial statements referred to above present fairly in all material respects, the financial position of the Bank as of December 31, 1999 and 1998, and results of its operations for the years then ended, on the basis of accounting described in Note 3.



Cleveland, Ohio
March 3, 2000

Comparative Financial Statements

Statement of Condition

(in millions)

	As of December 31,1999	As of December 31,1998
Assets		
Gold certificates	$ 566	$ 643
Special drawing rights certificates	299	574
Coin	11	16
Items in process of collection	401	527
U.S. government and federal agency securities, net	28,011	29,680
Investments denominated in foreign currencies	1,081	1,271
Accrued interest receivable	282	280
Interdistrict settlement account	3,272	—
Bank premises and equipment, net	192	190
Other assets	57	23
Total assets	$ 34,172	$ 33,204
Liabilities and Capital		
Liabilities:		
Federal Reserve notes outstanding, net	$ 31,757	$ 26,164
Deposits:		
Depository institutions	1,118	1,574
Other deposits	5	14
Deferred credit items	315	334
Surplus transfer due U.S. Treasury	22	84
Interdistrict settlement account	—	4,170
Accrued benefit cost	52	49
Other liabilities	15	17
Total liabilities	33,284	32,406
Capital:		
Capital paid-in	$ 444	$ $399
Surplus	444	399
Total capital	888	798
Total liabilities and capital	$ 34,172	$ 33,204

The accompanying notes are an integral part of these financial statements.

Statement of Income
(in millions)

	For the year ended December 31, 1999	For the year ended December 31, 1998
Interest income:		
Interest on U.S. government and federal agency securities	$ 1,638	$ 1,755
Interest on foreign currencies	15	28
Total interest income	$ 1,653	$ 1,783
Other operating income (loss):		
Income from services	$ 54	$ 52
Reimbursable services to government agencies	28	29
Foreign currency (losses) gains, net	(34)	120
U.S. government securities (losses) gains, net	(1)	3
Other income	3	2
Total other operating income	$ 50	$ 206
Operating expenses:		
Salaries and other benefits	$ 74	$ 71
Occupancy expense	13	13
Equipment expense	11	10
Cost of unreimbursed Treasury services	1	1
Assessments by Board of Governors	40	37
Other expenses	64	56
Total operating expenses	$ 203	$ 188
Net income prior to distribution	$ 1,500	$ 1,801
Distribution of net income:		
Dividends paid to member banks	$ 25	$ 23
Transferred to surplus	45	64
Payments to U.S. Treasury as interest on Federal Reserve notes	1,430	546
Payments to U.S. Treasury as required by statute	—	1,168
Total distribution	$ 1,500	$ 1,801

Statement of Changes in Capital
(in millions)

For the years ended December 31, 1999 and December 31, 1998

	Capital Paid-in	Surplus	Total Capital
Balance at January 1, 1998 (7.0 million shares)	$ 349	$ 335	$ 684
Net income transferred to Surplus	—	64	64
Net change in capital stock issued (1.0 million shares)	50	—	50
Balance at December 31, 1998 (8.0 million shares)	$ 399	$ 399	$ 798
Net income transferred to Surplus	—	45	45
Net change in capital stock issued (0.9 million shares)	45	—	45
Balance at December 31, 1999 (8.9 million shares)	$ 444	$ 444	$ 888

The accompanying notes are an integral part of these financial statements.

Notes to Financial Statements

1. ORGANIZATION:

The Federal Reserve Bank of Cleveland ("Bank") is part of the Federal Reserve System ("System") created by Congress under the Federal Reserve Act of 1913 ("Federal Reserve Act") which established the central bank of the United States. The System consists of the Board of Governors of the Federal Reserve System ("Board of Governors") and twelve Federal Reserve Banks ("Reserve Banks"). The Reserve Banks are chartered by the federal government and possess a unique set of governmental, corporate, and central bank characteristics. Other major elements of the System are the Federal Open Market Committee ("FOMC") and the Federal Advisory Council. The FOMC is composed of members of the Board of Governors, the president of the Federal Reserve Bank of New York ("FRBNY") and, on a rotating basis, four other Reserve Bank presidents.

Structure:

The Bank and its branches in Cincinnati and Pittsburgh serve the Fourth Federal Reserve District, which includes Ohio and a portion of Kentucky, Pennsylvania, and West Virginia. In accordance with the Federal Reserve Act, supervision and control of the Bank is exercised by a board of directors. Banks that are members of the System include all national banks and any state chartered bank that applies and is approved for membership in the System.

Board of Directors:

The Federal Reserve Act specifies the composition of the board of directors for each of the Reserve Banks. Each board is composed of nine members serving three-year terms: three directors, including those designated as Chairman and Deputy Chairman, are appointed by the Board of Governors, and six directors are elected by member banks. Of the six elected by member banks, three represent the public and three represent member banks. Member banks are divided into three classes according to size. Member banks in each class elect one director representing member banks and one representing the public. In any election of directors, each member bank receives one vote, regardless of the number of shares of Reserve Bank stock it holds.

2. OPERATIONS AND SERVICES:

The System performs a variety of services and operations. Functions include: formulating and conducting monetary policy; participating actively in the payments mechanism, including large-dollar transfers of funds, automated clearinghouse operations and check processing; distribution of coin and currency; fiscal agency functions for the U.S. Treasury and certain federal agencies; serving as the federal government's bank; providing short-term loans to depository institutions; serving the consumer and the community by providing educational materials and information regarding consumer laws; supervising bank holding companies, and state member banks; and administering other regulations of the Board of Governors. The Board of Governors' operating costs are funded through assessments on the Reserve Banks.

The FOMC establishes policy regarding open market operations, oversees these operations, and issues authorizations and directives to the FRBNY for its execution of transactions. Authorized transaction types include direct purchase and sale of securities, matched sale-purchase transactions, the purchase of securities under agreements to resell, and the lending of U.S. government securities. Additionally, the FRBNY is authorized by the FOMC to hold balances of and to execute spot and forward foreign exchange and securities contracts in fourteen foreign currencies, maintain reciprocal currency arrangements ("F/X swaps") with various central banks, and "warehouse" foreign currencies for the U.S. Treasury and Exchange Stabilization Fund ("ESF") through the Reserve Banks.

3. SIGNIFICANT ACCOUNTING POLICIES:

Accounting principles for entities with the unique powers and responsibilities of the nation's central bank have not been formulated by the Financial Accounting Standards Board. The Board of Governors has developed specialized accounting principles and practices that it believes are appropriate for the significantly different nature and function of a central bank as compared to the private sector. These accounting principles and practices are documented in the "Financial Accounting Manual for Federal Reserve Banks" ("Financial Accounting Manual"), which is issued by the Board of Governors. All Reserve Banks are required to adopt and apply accounting policies and practices that are consistent with the Financial Accounting Manual.

The financial statements have been prepared in accordance with the Financial Accounting Manual. Differences exist between the accounting principles and practices of the System and generally accepted accounting principles in the United States ("GAAP"). The primary differences are the presentation of all security holdings at amortized cost, rather than at the fair value presentation requirements of GAAP, and the accounting for matched sale-purchase transactions as separate sales and purchases, rather than secured borrowings with pledged collateral, as is required by GAAP. In addition, the Bank has elected not to present a Statement of Cash Flows or a Statement of Comprehensive Income. The Statement of Cash Flows has not been included as the liquidity and cash position of the Bank are not of primary concern to the users of these financial statements. The Statement of Comprehensive Income, which comprises net income plus or minus certain adjustments, such as the fair value adjustment for securities, has not been included because as stated above the securities are recorded at amortized cost and there are no other adjustments in the determination of Comprehensive Income applicable to the Bank. Other information regarding the Bank's activities is provided in, or may be derived from, the Statements of Condition, Income, and Changes in Capital. Therefore, a Statement of Cash Flows or a Statement of Comprehensive Income would not provide any additional useful information. There are no other significant differences between the policies outlined in the Financial Accounting Manual and GAAP.

The preparation of the financial statements in conformity with the Financial Accounting Manual requires management to make certain estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of income and expenses during the reporting period. Actual results could differ from those estimates. Unique accounts and significant accounting policies are explained below.

a. Gold Certificates

The Secretary of the Treasury is authorized to issue gold certificates to the Reserve Banks to monetize gold held by the U.S. Treasury. Payment for the gold certificates by the Reserve Banks is made by crediting equivalent amounts in dollars into the account established for the U.S. Treasury. These gold certificates held by the Reserve Banks are required to be backed by the gold of the U.S. Treasury. The U.S. Treasury may reacquire the gold certificates at any time and the Reserve Banks must deliver them to the U.S. Treasury. At such time, the U.S. Treasury's account is charged and the Reserve Banks' gold certificate accounts are lowered. The value of gold for purposes of backing the gold certificates is set by law at $42 2/9 a fine troy ounce. The Board of Governors allocates the gold certificates among Reserve Banks once a year based upon Federal Reserve notes outstanding in each District at the end of the preceding year.

b. Special Drawing Rights Certificates

Special drawing rights ("SDRs") are issued by the International Monetary Fund ("Fund") to its members in proportion to each member's quota in the Fund at the time of issuance. SDRs serve as a supplement to international monetary reserves and may be transferred from one national monetary authority to another. Under the law providing for United States participation in the SDR system, the Secretary of the U.S. Treasury is authorized to issue SDR certificates, somewhat like gold certificates, to the Reserve Banks. At such time, equivalent amounts in dollars are credited to the account established for the U.S. Treasury, and the Reserve Banks' SDR certificate accounts are increased. The Reserve Banks are required to purchase SDRs, at the direction of the U.S. Treasury, for the purpose of financing SDR certificate acquisitions or for financing exchange stabilization operations. The Board of Governors allocates each SDR transaction among Reserve Banks based upon Federal Reserve notes outstanding in each District at the end of the preceding year.

c. Loans to Depository Institutions

The Depository Institutions Deregulation and Monetary Control Act of 1980 provides that all depository institutions that maintain reservable transaction accounts or nonpersonal time deposits, as defined in Regulation D issued by the Board of Governors, have borrowing privileges at the discretion of the Reserve Banks. Borrowers execute certain lending agreements and deposit sufficient collateral before credit is extended. Loans are evaluated for collectibility, and currently all are considered collectible and fully collateralized. If any loans were deemed to be uncollectible, an appropriate reserve would be established. Interest is recorded on the accrual basis and is charged at the applicable discount rate established at least every fourteen days by the Board of Directors of the Reserve Banks, subject to review by the Board of Governors. However, Reserve Banks retain the option to impose a surcharge above the basic rate in certain circumstances. There were no outstanding loans to depository institutions at December 31, 1999 and 1998 respectively.

The Board of Governors established a Special Liquidity Facility (SLF) to make discount window credit readily available to depository institutions in sound financial condition around the century date change (October 1, 1999, to April 7, 2000) in order to meet unusual liquidity demands and to allow institutions to confidently commit to supplying loans to other institutions and businesses during this period. Under the SLF, collateral requirements are unchanged from normal discount window activity and loans are made at a rate of 150 basis points above FOMC's target federal funds rate.

d. U.S. Government and Federal Agency Securities and Investments Denominated in Foreign Currencies

The FOMC has designated the FRBNY to execute open market transactions on its behalf and to hold the resulting securities in the portfolio known as the System Open Market Account ("SOMA"). In addition to authorizing and directing operations in the domestic securities market, the FOMC authorizes and directs the FRBNY to execute operations in foreign markets for major currencies in order to counter disorderly conditions in exchange markets or other needs specified by the FOMC in carrying out the System's central bank responsibilities.

Purchases of securities under agreements to resell and matched sale-purchase transactions are accounted for as separate sale and purchase transactions. Purchases under agreements to resell are transactions in which the FRBNY purchases a security and sells it back at the rate specified at the commencement of the transaction. Matched sale-purchase transactions are transactions in which the FRBNY sells a security and buys it back at the rate specified at the commencement of the transaction.

Effective April 26, 1999 FRBNY was given the sole authorization by the FOMC to lend U.S. government securities held in the SOMA to U.S. government securities dealers and to banks participating in U.S. government securities clearing arrangements, in order to facilitate the effective functioning of the domestic securities market. These securities-lending transactions are fully collateralized by other U.S. government securities. FOMC policy requires FRBNY to take possession of collateral in amounts in excess of the market values of the securities loaned. The market values of the collateral and the securities loaned are monitored by FRBNY on a daily basis, with additional collateral obtained as necessary. The securities loaned continue to be accounted for in SOMA. Prior to April 26, 1999 all Reserve Banks were authorized to engage in such lending activity.

Foreign exchange contracts are contractual agreements between two parties to exchange specified currencies, at a specified price, on a specified date. Spot foreign contracts normally settle two days after the trade date, whereas the settlement date on forward contracts is negotiated between the contracting parties, but will extend beyond two days from the trade date. The FRBNY generally enters into spot contracts, with any forward contracts generally limited to the second leg of a swap/warehousing transaction.

The FRBNY, on behalf of the Reserve Banks, maintains renewable, short-term F/X swap arrangements with authorized foreign central banks. The parties agree to exchange their currencies up to a pre-arranged maximum amount and for an agreed upon period of time (up to twelve months), at an agreed upon interest rate. These arrangements give the FOMC temporary access to foreign currencies that it may need for intervention operations to support the dollar and give the partner foreign central bank temporary access to dollars it may need to support its own currency. Drawings under the F/X swap arrangements can be initiated by either the FRBNY or the partner foreign central bank, and must be agreed to by the drawee. The F/X swaps are structured so that the party initiating the transaction (the drawer) bears the exchange rate risk upon maturity. The FRBNY will generally invest the foreign currency received under an F/X swap in interest-bearing instruments.

Warehousing is an arrangement under which the FOMC agrees to exchange, at the request of the Treasury, U.S. dollars for foreign currencies held by the Treasury or ESF over a limited period of time. The purpose of the warehousing facility is to supplement the U.S. dollar resources of the Treasury and ESF for financing purchases of foreign currencies and related international operations.

In connection with its foreign currency activities, the FRBNY, on behalf of the Reserve Banks, may enter into contracts which contain varying degrees of off-balance sheet market risk, because they represent contractual commitments involving future settlement, and counter-party credit risk. The FRBNY controls credit risk by obtaining credit approvals, establishing transaction limits, and performing daily monitoring procedures.

While the application of current market prices to the securities currently held in the SOMA portfolio and investments denominated in foreign currencies may result in values substantially above or below their carrying values, these unrealized changes in value would have no direct effect on the quantity of reserves available to the banking system or on the prospects for future Reserve Bank earnings or capital. Both the domestic and foreign components of the SOMA portfolio from time to time involve transactions that can result in gains or losses when holdings are sold prior to maturity. However, decisions regarding the securities and foreign currencies transactions, including their purchase and sale, are motivated by monetary policy objectives rather than profit. Accordingly, earnings and any gains or losses resulting from the sale of such currencies and securities are incidental to the open market operations and do not motivate its activities or policy decisions.

U.S. government and federal agency securities and investments denominated in foreign currencies comprising the SOMA are recorded at cost, on a settlement-date basis, and adjusted for amortization of premiums or accretion of discounts on a straight-line basis. Interest income is accrued on a straight-line basis and is reported as "Interest on U.S. government and federal agency securities" or "Interest on foreign currencies," as appropriate. Income earned on securities lending transactions is reported as a component of "Other income." Gains and losses resulting from sales of securities are determined by specific issues based on average cost. Gains and losses on the sales of U.S. government and federal agency securities are reported as "U.S. government securities gains (losses), net." Foreign currency denominated assets are revalued monthly at current market exchange rates in order to report these assets in U.S. dollars. Realized and unrealized gains and losses on investments denominated in foreign currencies are reported as "Foreign currency gains (losses), net." Foreign currencies held through F/X swaps, when initiated by the counter party, and warehousing arrangements are revalued monthly, with the unrealized gain or loss reported by the FRBNY as a component of "Other assets" or "Other liabilities," as appropriate.

Balances of U.S. government and federal agencies securities bought outright, investments denominated in foreign currency, interest income, amortization of premiums and discounts on securities bought outright, gains and losses on sales of securities, and realized and unrealized gains and losses on investments denominated in foreign currencies, excluding those held under an F/X swap arrangement, are allocated to each Reserve Bank. Effective April 26, 1999 income from securities lending transactions undertaken by FRBNY was also allocated to each Reserve Bank. Securities purchased under agreements to resell and unrealized gains and losses on the revaluation of foreign currency holdings under F/X swaps and warehousing arrangements are allocated to the FRBNY and not to other Reserve Banks.

e. Bank Premises and Equipment

Bank premises and equipment are stated at cost less accumulated depreciation. Depreciation is calculated on a straight-line basis over estimated useful lives of assets ranging from 2 to 50 years. New assets, major alterations, renovations and improvements are capitalized at cost as additions to the asset accounts. Maintenance, repairs and minor replacements are charged to operations in the year incurred.

f. Interdistrict Settlement Account

At the close of business each day, all Reserve Banks and branches assemble the payments due to or from other Reserve Banks and branches as a result of transactions involving accounts residing in other Districts that occurred during the day's operations. Such transactions may include funds settlement, check clearing and automated clearinghouse ("ACH") operations, and allocations of shared expenses. The cumulative net amount due to or from other Reserve Banks is reported as the "Interdistrict settlement account."

g. Federal Reserve Notes

Federal Reserve notes are the circulating currency of the United States. These notes are issued through the various Federal Reserve agents to the Reserve Banks upon deposit with such Agents of certain classes of collateral security, typically U.S. government securities. These notes are identified as issued to a specific Reserve Bank. The Federal Reserve Act provides that the collateral security tendered by the Reserve Bank to the Federal Reserve Agent must be equal to the sum of the notes applied for by such Reserve Bank. In accordance with the Federal Reserve Act, gold certificates, special drawing rights certificates, U.S. government and agency securities, loans, and investments denominated in foreign currencies are pledged as collateral for net Federal Reserve notes outstanding. The collateral value is equal to the book value of the collateral tendered, with the exception of securities, whose collateral value is equal to the par value of the securities tendered. The Board of Governors may, at any time, call upon a Reserve Bank for additional security to adequately collateralize the Federal Reserve notes. The Reserve Banks have entered into an agreement which provides for certain assets of the Reserve Banks to be jointly pledged as collateral for the Federal Reserve notes of all Reserve Banks in order to satisfy their obligation of providing sufficient collateral for outstanding Federal Reserve notes. In the event that this collateral is insufficient, the Federal Reserve Act provides that Federal Reserve notes become a first and paramount lien on all the assets of the Reserve Banks. Finally, as obligations of the United States, Federal Reserve notes are backed by the full faith and credit of the United States government.

The "Federal Reserve notes outstanding, net" account represents Federal Reserve notes reduced by cash held in the vaults of the Bank of $7,158 million, and $3,370 million at December 31, 1999 and 1998, respectively.

h. Capital Paid-in

The Federal Reserve Act requires that each member bank subscribe to the capital stock of the Reserve Bank in an amount equal to 6% of the capital and surplus of the member bank. As a member bank's capital and surplus changes, its holdings of the Reserve Bank's stock must be adjusted. Member banks are those state-chartered banks that apply and are approved for membership in the System and all national banks. Currently, only one-half of the subscription is paid-in and the remainder is subject to call. These shares are nonvoting with a par value of $100. They may not be transferred or hypothecated. By law, each member bank is entitled to receive an annual dividend of 6% on the paid-in capital stock. This cumulative dividend is paid semiannually. A member bank is liable for Reserve Bank liabilities up to twice the par value of stock subscribed by it.

i. Surplus

The Board of Governors requires Reserve Banks to maintain a surplus equal to the amount of capital paid-in as of December 31. This amount is intended to provide additional capital and reduce the possibility that the Reserve Banks would be required to call on member banks for additional capital. Reserve Banks are required by the Board of Governors to transfer to the U.S. Treasury excess earnings, after providing for the costs of operations, payment of dividends, and reservation of an amount necessary to equate surplus with capital paid-in.

The Omnibus Budget Reconciliation Act of 1993 (Public Law 103-66, Section 3002) codified the existing Board surplus policies as statutory surplus transfers, rather than as payments of interest on Federal Reserve notes, for federal government fiscal years 1998 and 1997 (which ended on September 30, 1998 and 1997, respectively). In addition, the legislation directed the Reserve Banks to transfer to the U.S. Treasury additional surplus funds of $107 million and $106 million during fiscal years 1998 and 1997, respectively. Reserve Banks were not permitted to replenish surplus for these amounts during this time. Payments to the U.S. Treasury made after September 30, 1998, represent payment of interest on Federal Reserve notes outstanding.

The Consolidated Appropriations Act of 1999 (Public Law 106-113, Section 302) directed the Reserve Banks to transfer to the U.S. Treasury additional surplus funds of $3,752 million during the Federal Government's 2000 fiscal year. The Reserve Banks will make this payment prior to September 30, 2000.

In the event of losses, payments to the U.S. Treasury are suspended until such losses are recovered through subsequent earnings. Weekly payments to the U.S. Treasury may vary significantly.

j. Income and Cost related to Treasury Services

The Bank is required by the Federal Reserve Act to serve as fiscal agent and depository of the United States. By statute, the Department of the Treasury is permitted, but not required, to pay for these services. The costs of providing fiscal agency and depository services to the Treasury Department that have been billed but will not be paid are reported as the "Cost of unreimbursed Treasury services."

k. Taxes

The Reserve Banks are exempt from federal, state, and local taxes, except for taxes on real property, which are reported as a component of "Occupancy expense."

4. U.S. GOVERNMENT AND FEDERAL AGENCY SECURITIES:

Securities bought outright and held under agreements to resell are held in the SOMA at the FRBNY. An undivided interest in SOMA activity, with the exception of securities held under agreements to resell and the related premiums, discounts and income, is allocated to each Reserve Bank on a percentage basis derived from an annual settlement of interdistrict clearings. The settlement, performed in April of each year, equalizes Reserve Bank gold certificate holdings to Federal Reserve notes outstanding. The Bank's allocated share of SOMA balances was approximately 5.788% and 6.499% at December 31, 1999 and 1998, respectively.

The Bank's allocated share of securities held in the SOMA at December 31, that were bought outright, were as follows (in millions):

	1999	1998
Par value:		
Federal agency	$ 10	$ 22
U.S. government:		
Bills	10,218	12,659
Notes	12,646	12,212
Bonds	4,803	4,515
Total par value	27,677	29,408
Unamortized premiums	527	480
Unaccreted discounts	(193)	(208)
Total allocated to Bank	$ 28,011	$ 29,680

Total SOMA securities bought outright were $483,902 million and $456,667 million at December 31, 1999 and 1998, respectively.

The maturities of U.S. government and federal agency securities bought outright, which were allocated to the Bank at December 31, 1999, were as follows (in millions):

	Par value		
Maturities of Securities Held	U.S. Government Securities	Federal Agency Obligations	Total
Within 15 days	$ 268	$ —	$ 268
16 days to 90 days	5,320	2	5,322
91 days to 1 year	8,096	1	8,097
Over 1 year to 5 years	7,188	1	7,189
Over 5 years to 10 years	2,958	7	2,965
Over 10 years	3,836	—	3,836
Total	$ 27,666	$ 11	$ 27,677

At December 31, 1999, and 1998, matched sale-purchase transactions involving U.S. government securities with par values of $39,182 million and $20,927 million, respectively, were outstanding, of which $2,268 million and $1,360 million were allocated to the Bank. Matched sale-purchase transactions are generally overnight arrangements.

5. INVESTMENTS DENOMINATED IN FOREIGN CURRENCIES:

The FRBNY, on behalf of the Reserve Banks, holds foreign currency deposits with foreign central banks and the Bank for International Settlements and invests in foreign government debt instruments. Foreign government debt instruments held include both securities bought outright and securities held under agreements to resell. These investments are guaranteed as to principal and interest by the foreign governments.

Each Reserve Bank is allocated a share of foreign-currency-denominated assets, the related interest income, and realized and unrealized foreign currency gains and losses, with the exception of unrealized gains and losses on F/X swaps and warehousing transactions. This allocation is based on the ratio of each Reserve Bank's capital and surplus to aggregate capital and surplus at the preceding December 31. The Bank's allocated share of investments denominated in foreign currencies was approximately 6.696% and 6.425% at December 31, 1999 and 1998, respectively.

The Bank's allocated share of investments denominated in foreign currencies, valued at current exchange rates at December 31, were as follows (in millions):

	1999	1998
German Marks:		
Foreign currency deposits	$ —	$ 672
Government debt instruments including agreements to resell	—	152
European Union Euro:		
Foreign currency deposits	290	—
Government debt instruments including agreements to resell	170	—
Japanese Yen:		
Foreign currency deposits	22	43
Government debt instruments including agreements to resell	596	398
Accrued interest	3	6
Total	$ 1,081	$ 1,271

Total investments denominated in foreign currencies were $16,140 million and $19,769 million at December 31, 1999 and 1998, respectively. The 1998 balance includes $15 million in unearned interest collected on certain foreign currency holdings that is allocated solely to the FRBNY.

The maturities of investments denominated in foreign currencies which were allocated to the Bank at December 31, 1999, were as follows (in millions):

Maturities of Investments Denominated in Foreign Currencies	
Within 1 year	$ 1,009
Over 1 year to 5 years	33
Over 5 years to 10 years	39
Total	$ 1,081

At December 31, 1999 and 1998, there were no open foreign exchange contracts or outstanding F/X swaps.
At December 31, 1999 and 1998, the warehousing facility was $5,000 million with nothing outstanding.

6. BANK PREMISES AND EQUIPMENT:

A summary of bank premises and equipment at December 31 is as follows (in millions):

	1999	1998
Bank premises and equipment:		
Land	$ 7	$ 7
Buildings	148	141
Building machinery and equipment	41	40
Construction in progress	1	5
Furniture and equipment	71	65
	268	258
Accumulated depreciation	(76)	(68)
Bank premises and equipment, net	$ 192	$ 190

Depreciation expense was $12 million and $10 million for the years ended December 31, 1999 and 1998, respectively.

The Bank leases unused space to outside tenants. Those leases have terms ranging from 1 to 16 years. Rental income from such leases was $934 thousand and $253 thousand for the years ended December 31, 1999 and 1998, respectively. Future minimum lease payments under agreements in existence at December 31, 1999, were (in millions):

2000	$ 1
2001	1
2002	1
2003	1
2004	1
Thereafter	9
	$ 14

7. COMMITMENTS AND CONTINGENCIES:

At December 31, 1999, the Bank was obligated under noncancelable leases for premises and equipment with terms ranging from 1 to approximately 3 years. These leases provide for increased rentals based upon increases in real estate taxes, operating costs or selected price indices.

Rental expense under operating leases for certain operating facilities, warehouses, and data processing and office equipment (including taxes, insurance and maintenance when included in rent), net of sublease rentals, was $452 thousand and $2 million for the years ended December 31, 1999 and 1998, respectively. Certain of the Bank's leases have options to renew.

Future minimum rental payments under noncancelable operating leases and capital leases, net of sublease rentals, with terms of one year or more, at December 31, 1999, were not material.

Under the Insurance Agreement of the Federal Reserve Banks dated as of March 2, 1999, each of the Reserve Banks has agreed to bear, on a per incident basis, a pro rata share of losses in excess of 1% of the capital paid-in of the claiming Reserve Bank, up to 50% of the total capital paid-in of all Reserve Banks. Losses are borne in the ratio that a Reserve Bank's capital paid-in bears to the total capital paid-in of all Reserve Banks at the beginning of the calendar year in which the loss is shared. No claims were outstanding under such agreement at December 31, 1999 or 1998.

The Bank is involved in certain legal actions and claims arising in the ordinary course of business. Although it is difficult to predict the ultimate outcome of these actions, in management's opinion, based on discussions with counsel, the aforementioned litigation and claims will be resolved without material adverse effect on the financial position or results of operations of the Bank.

8. RETIREMENT AND THRIFT PLANS:

Retirement Plans:

The Bank currently offers two defined benefit retirement plans to its employees, based on length of service and level of compensation. Substantially all of the Bank's employees participate in the Retirement Plan for Employees of the Federal Reserve System ("System Plan") and the Benefit Equalization Retirement Plan ("BEP"). The System Plan is a multi-employer plan with contributions fully funded by participating employers. No separate accounting is maintained of assets contributed by the participating employers. The Bank's projected benefit obligation and net pension costs for the BEP at December 31, 1999 and 1998, and for the years then ended, are not material.

Thrift Plan:

Employees of the Bank may also participate in the defined contribution Thrift Plan for Employees of the Federal Reserve System ("Thrift Plan"). The Bank's Thrift Plan contributions totaled $2 million for each of the years ended December 31, 1999 and 1998, and are reported as a component of "Salaries and other benefits."

9. POSTRETIREMENT BENEFITS OTHER THAN PENSIONS AND POSTEMPLOYMENT BENEFITS:

Postretirement Benefits other than Pensions:

In addition to the Bank's retirement plans, employees who have met certain age and length of service requirements are eligible for both medical benefits and life insurance coverage during retirement.

The Bank funds benefits payable under the medical and life insurance plans as due and, accordingly, has no plan assets. Net postretirement benefit cost is actuarially determined using a January 1 measurement date.

Following is a reconciliation of beginning and ending balances of the benefit obligation (in millions):

	1999	1998
Accumulated postretirement benefit obligation at January 1	$ 44.2	$ 37.9
Service cost-benefits earned during the period	1.1	1.1
Interest cost of accumulated benefit obligation	2.3	2.6
Actuarial (gain) loss	(9.3)	3.6
Contributions by plan participants	0.2	0.1
Benefits paid	(1.3)	(1.1)
Accumulated postretirement benefit obligation at December 31	$ 37.2	$ 44.2

Following is a reconciliation of the beginning and ending balance of the plan assets, the unfunded postretirement benefit obligation, and the accrued postretirement benefit cost (in millions):

	1999	1998
Fair value of plan assets at January 1	$ —	$ —
Actual return on plan assets	—	—
Contributions by the employer	1.1	1.0
Contributions by plan participants	0.2	0.1
Benefits paid	(1.3)	(1.1)
Fair value of plan assets at December 31	$ —	—
Unfunded postretirement benefit obligation	$ 37.2	$ 44.2
Unrecognized prior service cost	—	—
Unrecognized net actuarial gain	9.5	0.2
Accrued postretirement benefit cost	$ 46.7	$ 44.4

Accrued postretirement benefit cost is reported as a component of "Accrued benefit cost."

The weighted-average assumption used in developing the postretirement benefit obligation as of December 31, 1999 and 1998 was 7.5% and 6.25%, respectively.

For measurement purposes, an 8.75% annual rate of increase in the cost of covered health care benefits was assumed for 2000. Ultimately, the health care cost trend rate is expected to decrease gradually to 5.50% by 2006, and remain at that level thereafter.

Assumed health care cost trend rates have a significant effect on the amounts reported for health care plans. A one percentage point change in assumed health care cost trend rates would have the following effects for the year ended December 31, 1999 (in millions):

	1 Percentage Point Increase	1 Percentage Point Decrease
Effect on aggregate of service and interest cost components of net periodic postretirement benefit cost	$ 0.9	$ (0.7)
Effect on accumulated postretirement benefit obligation	6.4	(5.3)

The following is a summary of the components of net periodic postretirement benefit cost for the years ended December 31 (in millions):

	1999	1998
Service cost-benefits earned during the period	$ 1.1	$ 1.1
Interest cost of accumulated benefit obligation	2.3	2.6
Amortization of prior service cost	—	—
Recognized net actuarial loss	(0.1)	(0.1)
Net periodic postretirement benefit cost	$ 3.3	$ 3.6

Net periodic postretirement benefit cost is reported as a component of "Salaries and other benefits."

Postemployment Benefits:

The Bank offers benefits to former or inactive employees. Postemployment benefit costs are actuarially determined and include the cost of medical and dental insurance, survivor income, and disability benefits. Costs were projected using the same discount rate and health care trend rates as were used for projecting postretirement costs. The accrued postemployment benefit costs recognized by the Bank was $5 million for each of the years ended December 31, 1999 and 1998. This cost is included as a component of "Accrued benefit cost." Net periodic postemployment benefit costs included in 1999 and 1998 operating expenses were $1 million for the years ended December 31, 1999 and 1998.

Officers and Consultants

As of December 31, 1999

Jerry L. Jordan
President & Chief Executive Officer

Sandra Pianalto
First Vice President & Chief Operating Officer

Lawrence Cuy
Senior Vice President
Financial Management Services, Strategic Planning, Information Technology, COSO

R. Chris Moore
Senior Vice President
Banking Supervision and Regulation, Credit Risk Management, Data Services

Robert W. Price
Senior Vice President
Retail Product Office, Check Automation and Operations

Samuel D. Smith
Senior Vice President
Cash, Treasury Services, Savings Bonds, Facilities, Information Security, Protection, Business Continuity

Mark S. Sniderman
Senior Vice President & Director of Research
Research, Corporate Communications and Community Affairs

Donald G. Vincel
Senior Vice President
Special Projects, UNISYS IPS Development

Robert F. Ware
Senior Vice President
Check, Marketing, Electronic Payments

David E. Altig
Vice President & Economist
Research

Terry N. Bennett
Vice President
Information Technology Services

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Barbara B. Henshaw
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Protection, Business Continuity

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Cash, Treasury Services, Electronic Payments

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Vice President
Financial Management

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Senior Consultant
Information Technology Services

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Marketing, Sales

Terrence J. Roth
Vice President
Retail Product Office, Marketing

Robert B. Schaub
Vice President
Pittsburgh Location Officer, Check Operations, Protection, Business Continuity

Susan G. Schueller
Vice President & General Auditor
Audit

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Vice President
Credit Risk Management, Data Services

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Vice President & Economist
Research

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Human Resources, Quality, EEO Officer

Andrew W. Watts
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Legal, Ethics

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Cincinnati and Columbus Check Operations

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IPS Development

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Cleveland Check Operations

Michael Vangelos
Assistant Vice President
Information Security

Darell R. Wittrup
Assistant Vice President
Accounting, Billing

Consultants are highly skilled employees who contribute to attaining the Bank's goals through their specialized professional or technical skills.

Directors

As of December 31, 1999

Cleveland

G. Watts Humphrey, Jr.
Chairman & Federal Reserve Agent
President
GWH Holdings, Inc.
Pittsburgh, Pennsylvania

David H. Hoag
Deputy Chairman
Former Chairman
The LTV Corporation
Cleveland, Ohio

John R. Cochran
Chairman & CEO
FirstMerit Corporation
Akron, Ohio

David S. Dahlmann
President & CEO
Southwest Bank
Greensburg, Pennsylvania

Wayne R. Embry
President
Cleveland Cavaliers
Cleveland, Ohio

Robert Y. Farrington
Executive Secretary-Treasurer, Emeritus
Ohio State Building and
Construction Trades Council
Columbus, Ohio

Cheryl L. Krueger-Horn
President & CEO
Cheryl&Co.
Westerville, Ohio

Tiney M. McComb
Chairman & President
Heartland BancCorp
Gahanna, Ohio

David L. Nichols
Former Chairman & CEO
Mercantile Stores, Inc.
Fairfield, Ohio

Cincinnati

George C. Juilfs
Chairman
President & CEO
SENCORP
Newport, Kentucky

Judith G. Clabes
President & CEO
Scripps Howard Foundation
Cincinnati, Ohio

Phillip R. Cox
President & CEO
Cox Financial Corporation
Cincinnati, Ohio

Jean R. Hale
President & CEO
Community Trust Bancorp, Inc.
Pikeville, Kentucky

Thomas Revely III
President & CEO
Cincinnati Bell Supply Co.
Cincinnati, Ohio

Wayne Shumate
Chairman & CEO
Kentucky Textiles, Inc.
Paris, Kentucky

Stephen P. Wilson
Chairman, President & CEO
Lebanon Citizens National Bank
Lebanon, Ohio

Pittsburgh

John T. Ryan III
Chairman
Chairman & CEO
Mine Safety Appliances Company
Pittsburgh, Pennsylvania

Georgia Berner
President
Berner International Corp.
New Castle, Pennsylvania

Charles E. Bunch
Senior Vice President, Strategic
Planning and Corporate Services
PPG Industries, Inc.
Pittsburgh, Pennsylvania

Gretchen R. Haggerty
Vice President, Accounting and Finance
U.S. Steel Group
Pittsburgh, Pennsylvania

Thomas J. O'Shane
Senior Executive Vice President
Sky Financial Group
New Castle, Pennsylvania

Edward V. Randall, Jr.
Management Consultant
Babst Calland Clements & Zomnir
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Peter N. Stephans
Chairman & CEO
Trigon, Incorporated
McMurray, Pennsylvania

Robert W. Gillespie
Federal Advisory Council Representative
Chairman & CEO
KeyCorp
Cleveland, Ohio

David L. Nichols, David H. Hoag, Cheryl L. Krueger-Horn, Tiney M. McComb, David S. Dahlmann, Robert Y. Farrington, and G. Watts Humphrey, Jr.

Thomas Revely III, Phillip R. Cox, George C. Juilfs, Judith G. Clabes, Stephen P. Wilson, and Jean R. Hale

Peter N. Stephans, John T. Ryan III, and Edward V. Randall, Jr.

Operational Highlights

Payments Services Providing innovative and cost-effective services to the financial services industry, the public, and the U.S. Treasury is a primary goal of the Cleveland Reserve Bank. Cleveland's check processing function ranked second among the 12 Reserve Banks in the aggregate cross-sectional unit-cost index, which compares efficiency Systemwide. The same index ranked Cleveland second in the retail payments function. The cash function continued to lead the System in currency processing productivity. All financial services — automated clearinghouse operations, cash services, check processing, funds transfer, and book-entry securities transfer — ranked in the top quartile for lowest unit cost.

The Bank's largest priced service, check processing, achieved a cost–revenue match and met local net revenue targets, which are critical to the Federal Reserve System's ability to meet national-level cost recovery targets. All other priced services met their targets for local net revenue, with the exception of wholesale payments. While the book entry area met its local net revenue target and achieved full cost recovery, the funds transfer area fell short of its target and did not match costs with revenue. All other priced services succeeded in achieving a cost–revenue match; coin wrapping was the exception, due in part to a decision to exit the business.

The Cleveland Reserve Bank assumed a leadership role as the first Reserve Bank to implement the Enterprise-Wide Adjustment (EWA) check processing system. Nationwide use of this standardized check-adjustment processing software will improve service efficiencies across the System, streamline cross-District adjustments processing, accelerate error resolution, and enhance customer service.

The Bank assumed a leadership role in the System to pilot a new cash-ordering application with several depository institutions in the Fourth District. This Web-based application — FedLine® Cash Web — will be instrumental in meeting financial institutions' demand for coin and currency more effectively and improving the efficiency of cash operations.

The Cleveland Reserve Bank implemented a new software package, FedEDI, to make the automated clearinghouse (ACH) a more attractive payment option for a much broader spectrum of banking customers. Through ACH, institutions, firms, and consumers can make direct deposits and payments electronically. However, many banks lack the software to translate electronic invoices into plain English for their corporate customers; the FedEDI software provides the solution by translating this information.

In partnership with the Federal Reserve Bank of Atlanta, the Cleveland Fed continued leadership of the Retail Product Office (RPO), which manages check processing and automated clearinghouse operations for the Federal Reserve System. The RPO played a key role in Y2K compliance for System check processing operations, as well as contingency and event planning. Significant accomplishments were made in national check product development, including standardization of electronic products across all Reserve Banks and progress toward a national check business strategy. The RPO also participated in the check modernization project to standardize check-processing software on an IBM platform.

The Federal Reserve System named Cleveland as its FedLine® for Windows Installation Center. This facility will provide the implementation and security components for all installations of the FedLine® for Windows software across the country.

The Bank was selected as the Federal Reserve System's software application development site for the U.S. Treasury's Savings Bond Architecture Project. This project will equip the System's five savings bond processing sites with heightened capability and flexibility to provide consistent products and customer service.

The Bank forged partnerships with 20 major local utility companies and established collaborative agreements with the San Francisco, Richmond, and Kansas City Reserve Banks to use the automated clearinghouse network as the cornerstone for delivering consumer bills electronically. The Bank developed marketing and operating roles for this new electronic billing and payments opportunity.

The Pittsburgh Office of the Cleveland Bank ranked first in unit cost among the five Federal Reserve savings bond processing sites. A new tracking and control system, which will result in improved quality for the operation, was successfully initiated. In addition, the Bank completed installation of the Regional Delivery System for the five savings bonds sites; this technology, which electronically scans savings bond applications, greatly improves application-processing efficiencies.

Monetary Policy/Research The Bank's staff of research economists advanced its core research areas by contributing original research, sponsoring and promoting research by other economic professionals, and disseminating knowledge to nonacademic stakeholders.

Economic research articles appearing in Bank publications and other scholarly outlets built on strengths in the areas of inflation and inflation-expectations measurement, labor market productivity, and the nexus between the monetary policy, regulatory, and payments systems elements of central banking. These efforts advanced the Bank's goal of becoming a respected contributor to strategic thinking about System policy issues and promoting constructive discourse on those issues in the public domain.

The Bank's staff of research economists had 34 articles published or accepted for publication in scholarly journals and collected works. The department continued to publish *Economic Trends*, *Economic Review*, and *Economic Commentary*, which have a national and international circulation.

The Research Department sponsored five conferences, workshops, educational initiatives, and outreach programs on a variety of topics, including Fed Challenge, the System's nationwide high school academic competition. The department, along with the *Journal of Money, Credit, and Banking*, sponsored a conference on the role of central banks in financial markets, bringing Federal Reserve policymakers together with more than 30 eminent economists from U.S. and foreign universities, the World Bank, and the Federal Communications Commission. A workshop sponsored by the department brought together economists from academia, the International Monetary Fund, and the Federal Reserve to discuss the payments system and central banking issues.

The department's outreach efforts play a key role in interpreting monetary policy and explaining the purposes and functions of the Federal Reserve to the public. Staff economists were the featured speakers at regional business association, bank, financial firm, and university meetings.

In partnership with The Ohio State University, the Research Department developed an inflation-expectations survey designed to measure inflation perceptions by family size, homeownership, gender, education, income, and job status. This survey will lay the groundwork for further study and assessment and will contribute to an improved understanding of inflation perceptions and expectations among Ohio residents and businesses.

The Bank established a planning workgroup for a Central Bank Institute and Education Center. This effort will educate students of all ages about the ways the Federal Reserve affects our economy as a supervisor of financial markets, an administrator of monetary policy, and a facilitator of national payments systems.

The economic research staff has the primary responsibility for supporting the Bank president's membership in the Federal Open Market Committee (FOMC). The staff of research economists reorganized the format for the briefings and continued to provide high-quality analytical support and policy advice to the Bank president in preparation for FOMC meetings.

Banking Supervision and Regulation To ensure the Fourth District's readiness for the Year 2000 rollover, the Bank devoted significant resources to preparedness efforts, aggressively monitoring and assessing District institutions by following Year 2000 examination procedures, and met all Federal Financial Institutions Examination Council (FFIEC) and System Y2K examination guidelines. All Fourth District institutions achieved a satisfactory rating by the end of the third quarter.

The Bank continued to advance its risk-focused supervisory examinations, risk monitoring, and surveillance procedures, an approach that takes into account how banks measure and manage risks in their loan and investment portfolios. Supervision staff completed on-site reviews for 81 depository institutions and service providers (exceeding System deadline requirements) and successfully integrated safety-and-soundness and specialty inspections — a process that assesses all risks within an organization simultaneously.

The Bank continued to maximize the use of technology to improve the overall supervision and regulation process. Advances in the area's knowledge management system, SuperLink, and automated scheduling systems allowed staff to plan examinations more effectively, to identify risks proactively, and to implement the primary and internal point-of-contact program more effectively. These initiatives resulted in fewer on-site examinations, thus reducing the regulatory burden on financial institutions and bank holding companies.

The Bank implemented the Federal Reserve System's supervisory program for large, complex banking organizations. To this end, the Bank strengthened specific examiner team assignments for companies over $10 billion and matched supervisory skill sets with individual financial services companies' risk profiles and business lines.

The Bank continued to facilitate strong working relationships between financial institutions and community development organizations. Consumer affairs supervision staff conducted outreach programs on FFIEC fair lending procedures and made significant strides in developing surveillance and monitoring guidelines. In partnership with the Cleveland Restoration Society, the Bank hosted a symposium that explored urban planning and reinvestment.

The credit risk management and data services functions implemented cross-District, as-of adjustments processing and increased their interaction with Bank operating areas to enhance risk identification and cross-functional communications.

The Cleveland Fed's banking supervision, credit risk management and data services staff made significant leadership contributions to policymaking in the Federal Reserve System. These included chairing the National Information Center Steering Committee and the Risk Management Systems Task Force.

Quality Improvements The Cleveland Fed continued to make progress in realizing its strategic vision — to become the best example of a private enterprise serving the public interest. The Bank made substantial advances toward its four corporate goals: efficiency and effectiveness, customer culture, alignment, and leadership. In addition, the Bank advanced its balanced scorecard — the framework for its strategic management system — which ensures that Bank activities and expenditures are aligned with strategic direction and customer needs. The balanced scorecard was enhanced at the corporate and functional levels to track performance against strategic plans.

A cross-functional team was organized to implement customer service initiatives that resulted from transformation efforts and customer surveys. The team assessed recommendations for a formal call-tracking system, certified customer service training, and customer service awards for staff.

The Bank addressed changes in the business environment by undertaking an intensive job-evaluation project intended to align job descriptions and compensation more closely with the marketplace.

The Cleveland Fed contributed to System leadership initiatives in several key areas. The Bank president chaired the Conference of Presidents throughout 1999, and the first vice president served on the System's Information Technology Oversight Committee. The Bank led strategy development for the next generation of

security infrastructure, which will enable the Federal Reserve to conduct business securely over the World Wide Web; made recommendations to revamp the System's cost accounting system; chaired the Executive Development Task Force; and provided leadership resources for the Smartcard for FedLine® project.

The Cleveland Fed spearheaded a workgroup that reviewed contingency plans for all the Reserve Banks' facility and protection functions and assessed the readiness of utility companies across the nation.

Century Date Change Certifying the readiness of internal systems and preparing the U.S. financial system for the Year 2000 were the Bank's highest priorities in 1999. All Federal Reserve System delivery dates and final project milestones were met ahead of System target dates. Staff throughout the Bank participated in comprehensive efforts to ensure that the Bank, the Federal Reserve System, and the banking community were ready for the century date change.

The Bank completed the second and third phases of the supervisory examination process in accordance with established System schedules, and all District institutions were rated satisfactory in their Y2K compliance efforts. Follow-up reviews were completed between August and November, and monthly on-site visits to large bank holding companies took place throughout the fourth quarter. In addition, regular health checks were conducted with banking institutions during the fourth quarter to ensure a successful transition. Examiners were on site at 11 key institutions during the rollover.

Activities in 1999 focused on communication and outreach efforts to ensure banking industry readiness and to strengthen public confidence. Fed representatives conducted seminars for financial institutions in 18 Fourth District cities to provide guidance on Y2K contingency planning, offer updates, explain testing procedures, and answer questions regarding regulatory and readiness issues. A Year 2000 Readiness and Reference Guide was produced to guide banks through test support details, special processing hours, contacts, financial institution responsibilities, and other vital rollover information.

To facilitate century-date-change readiness and public awareness, the Bank maintained high-profile communications with the media to ensure that proper attention and resources were given to Y2K readiness efforts. Further, Cleveland Fed representatives made many appearances before trade associations and community and business groups to help them develop strategies for dealing with the century rollover. Bank staff participated in a series of "Community Conversations" sponsored by the President's Council on Y2K Conversion.

The credit risk management function made significant contributions to the Bank's Y2K efforts by ensuring the liquidity readiness of Fourth District banking institutions. Record numbers of District banking organizations filed the necessary legal documentation to borrow from the Discount Window, in addition to pledging record amounts of borrowing collateral. These readiness efforts gave depository institutions a funding alternative to ensure sufficient transactional liquidity and provided a credit safety net to lessen any potential systemic crisis.

Extensive customer testing confirmed banks' ability to interact electronically with the Federal Reserve in a future-date environment and contributed to the success of the event. More than 540 financial institutions with electronic connections to the Bank scheduled 4,100 century-date-change tests. This high rate of response was a direct result of outreach efforts to institutions that did not conduct testing in 1998.

Internal simulation exercises certified the Bank's readiness and validated communications flows, century-date-change contingency plans, and office automation tools. New guidelines were developed for event management, including local financial institution health checks and problem tracking; proactive customer contact tracking; a skills inventory database; and on-line access to contingency plans. All systems functioned flawlessly throughout the rollover event.

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