

**Mr. Patrikis discusses the implications of the Year 2000 computer problem for international banking and finance** Statement by the First Vice-President of the Federal Reserve Bank of New York, Mr. Ernest T. Patrikis, before the Committee on Banking and Financial Services of the US House of Representatives on 23/6/98.

I am pleased to appear before the Committee today to discuss the implications of the Year 2000 computer problem for international banking and finance. I am appearing in my capacity as Chairman of the Joint Year 2000 Council, which is sponsored jointly by the Basle Committee on Banking Supervision, the G-10 central bank governors' Committee on Payment and Settlement Systems, the International Association of Insurance Supervisors, and the International Organization of Securities Commissions (collectively referred to as the "Sponsoring Organizations").

The international financial community has much work to do to prepare itself for the challenges posed by the Year 2000 ("Y2K") problem. While much good work is being done and progress in many areas is evident, more needs doing. The Sponsoring Organizations believe that mutual cooperation and information sharing can play a key role in helping individual market participants carry out these preparations and limit the scope of Y2K-related disruptions. Our major concern, of course, will be the possible impact of the Y2K problem on the functioning of the international financial system as a whole.

Federal Reserve Governor Edward W. Kelley, Jr. has recently elaborated on the activities of the Federal Reserve System in connection with the Y2K problem, as well on possible macroeconomic implications.<sup>1</sup> I will not attempt to cover those topics again here. Instead, this morning I will begin with some background on the possible implications of the Y2K problem for international banking and finance. Second, I will describe how various supervisory initiatives led to the formation of the Joint Year 2000 Council a little more than two months ago. Third, I will discuss the actions being taken by the Joint Year 2000 Council, particularly in the areas of raising awareness, improving preparedness, and contingency planning.

#### Background on the International Implications of the Y2K Problem

The Y2K bug potentially affects all organizations that are dependent on computer software applications or on embedded computer chips. In other words, nearly all financial organizations worldwide are potentially at risk. Even those whose own operations remain strictly paper-based are likely to be dependent on power, water, and telecommunications utilities, which must themselves address possible Y2K problems. Also, many non-financial customers have dependencies on technology.

All countries of the world, therefore, need to address the Y2K problem and its potential effects on their domestic financial markets. In some cases, it is said that computer systems in particular countries are not much affected because their national calendars are not based on the conventional Gregorian calendar used in the United States and many other countries. I do not derive much comfort from these statements because in most cases operating systems and the software applications running on them count internally with a conventional date system that may not be Y2K-compliant. These systems typically also need to connect and interact with other systems that use conventional dates, so these interfaces must be tested for Y2K-compliance. More broadly, mere assertions that computer applications are unaffected cannot be seen as a substitute for the rigorous

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<sup>1</sup> See Testimony of Governor Edward W. Kelley, Jr. Before the Committee on Commerce, Science, and Transportation, U.S. Senate. April 28, 1998.

assessment, remediation, and testing efforts that should be undertaken by financial market participants worldwide.

The increasing extent of cross-border, financial-market activity has been much remarked on in recent years. Perhaps less well known is the fact that this activity is dependent on a large, geographically diverse, and highly computer-intensive global infrastructure for each of the key phases of this activity -- from trade execution through to payment and settlement.

As an example, consider the daily financial market activities of a hypothetical US-based mutual fund holding stocks and bonds in a number of foreign jurisdictions. Such a mutual fund would likely execute trades via relationships with a set of securities dealers, who themselves might make use of other securities brokers and dealers, including some outside the United States. The operational integrity of the major securities dealers in each national securities market is critical to the smooth functioning of those markets. In addition, securities trading in most countries is reliant on the proper functioning of the respective exchanges, brokerage networks, or electronic trading systems and the national telecommunications infrastructure on which these all depend. Financial markets today are also highly dependent on the availability of real-time price and trade quotations provided by financial information services.

For record-keeping, administration, and trade settlement purposes, our hypothetical mutual fund would also likely maintain a relationship with one or more global custodians (banks or brokerage firms), who themselves would typically maintain relationships with a network of sub-custodians located in various domestic markets around the world. Actual settlement of securities transactions typically occurs over the books of a domestic securities depository, such as the Depository Trust Company ("DTC") or the Fedwire National Book-Entry System in the United States, or at one of the two major international securities depositories, Euroclear and Cedel. Additional clearing firms, such as the National Securities Clearing Corporation ("NSCC") and the Government Securities Clearing Corporation ("GSCC") in the United States, may also occupy central roles in the trade clearance and settlement process.

Payments and foreign exchange transactions on behalf of the mutual fund would involve the use of correspondent banks, both for the US dollar and for other relevant currencies. These transactions would typically settle over the books of domestic wholesale payment systems, such as the Clearing House Interbank Payments System ("CHIPS") or Fedwire in the United States, and the new TARGET system for the euro. Correspondent banks are also heavily dependent on the use of cross-border payments messaging through the network maintained by the Society for Worldwide Interbank Financial Telecommunications ("S.W.I.F.T.") to advise and confirm payments. To provide some sense of the magnitudes involved here, consider that the Fedwire and CHIPS systems process a combined \$3 trillion in funds transfers on an average day (split roughly evenly between the two systems). While S.W.I.F.T. itself does not transfer funds, its messaging network carries over three million messages per day relating to financial transactions worldwide.

The many interconnections of the global financial market infrastructure imply that financial market participants in the United States could be affected by Y2K-related disruptions in other financial markets. In assessing the scope of any such potential problems, we should be realistic in accepting that some disruptions are inevitable, while also recognizing that not all countries confront Y2K problems of similar magnitudes. The problem simply affects too many organizations and too many systems to expect that 100 percent readiness will be achieved throughout the world. Nor are the best efforts of supervisors and regulators capable of completely eradicating the risk of disruption. Ultimately, the work of fixing the Y2K problem rests with firms themselves, and even some of the most determined and well-funded Year 2000 efforts may miss something.

Global Year 2000 Round Table

Recognizing the global nature of the issues surrounding the Y2K problem, each of the Sponsoring Organizations undertook initiatives in 1997 to raise awareness, enhance disclosure, and prompt appropriate action within the financial industry. Their decision last fall to organize a Global Year 2000 Round Table was motivated by a growing sense of the seriousness of the Y2K challenges posed in many countries and of the potentially severe consequences for financial markets that fail to meet these challenges. The Global Year 2000 Round Table was held at the Bank for International Settlements on April 8, 1998. It was attended by more than 200 senior executives from 52 countries, representing a variety of private and public organizations in the financial, information technology, telecommunications, and business communities around the world.<sup>2</sup>

The discussions at the Round Table confirmed that the Y2K issue must be a top priority for directors and senior management, and that the public and private sectors should increase efforts to share information. The importance of thorough testing, both internally and with counterparties, was emphasized as the most effective way to ensure that Y2K problems are minimized. Round Table participants identified the need to continue the widening and strengthening of external testing programs in many countries.

The communiqué issued by the four Sponsoring Organizations at the close of the Round Table recommended that market participants from regions that have not yet vigorously tackled the problem should consider the need to invest significant resources in the short time that remains. The Sponsoring Organizations further recommended that external testing programs be developed and expanded and that all financial market supervisors worldwide should implement programs that enable them to assess the Y2K readiness of the firms and market infrastructures that they supervise. The Sponsoring Organizations urged telecommunications and electricity providers to share information on the state of their own preparations and encouraged market participants and supervisors and regulators to consider the need to develop appropriate contingency procedures.

At the Round Table, a new private-sector initiative known as the Global 2000 Coordinating Group was announced. The aims of the Global 2000 effort are to identify and support coordinated initiatives by the global financial community to improve the Y2K readiness of financial markets worldwide. For example, current Global 2000 projects include the development of recommendations for financial infrastructure testing and guidelines for addressing Y2K compliance issues related to vendors and service providers. The Global 2000 Coordinating Group, which includes representatives from over 75 financial institutions in 18 countries, represents an extremely valuable private-sector attempt at cooperation on this important issue. At the same time, however, the international financial supervisory community recognized that it would be useful to establish a public-sector group, called the Joint Year 2000 Council, that would work with the private sector and also maintain a high level of attention on the Y2K problem among financial market supervisors and regulators worldwide.

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<sup>2</sup> A videotape containing highlights of the Global Year 2000 Round Table is available free of charge from the Bank for International Settlements. Please contact the Joint Year 2000 Council Secretariat at the Bank for International Settlements, Centralbahnplatz 2, CH-4002 Basle, Switzerland. (telephone: 41 61 2808432, fax: 41 61 280 9100, email: jy2kcouncil.bis.org) The Federal Financial Institutions Examinations Council ("FFIEC") has also placed the entirety of this videotape on its web site, where it is available for downloading in whole or in part. Please see [http://www.bog.frb.fed.us/y2k/video\\_index.htm#19980408](http://www.bog.frb.fed.us/y2k/video_index.htm#19980408)

### Joint Year 2000 Council

The formation of the Joint Year 2000 Council was announced at the end of the Global Year 2000 Round Table on April 8, 1998. The Joint Year 2000 Council consists of senior members of the four Sponsoring Organizations. Every continent is represented by at least one member on the Council. The Secretariat of the Council is provided by the Bank for International Settlements. I am honored to serve as the Chairman of the Joint Year 2000 Council.

The mission of the Joint Year 2000 Council has four parts: First, to ensure a high level of attention on the Y2K computer challenge within the global financial supervisory community; second, to share information on regulatory and supervisory strategies and approaches; third, to discuss possible contingency measures; and fourth, to serve as a point of contact with national and international private-sector initiatives. After their meetings on May 8-9, 1998, the G-7 finance ministers called on the Joint Year 2000 Council and its Sponsoring Organizations to monitor the Y2K-related work in the financial industry worldwide and to take all possible steps to encourage readiness.

The Council has met twice since being formed in early April and plans to meet frequently, almost monthly, between now and January, 2000. At our first meeting, we organized our work projects and approved our mission statement. At our second meeting, we met for the first time with an External Consultative Committee consisting of international public-sector and private-sector organizations. Meeting with this External Consultative Committee is intended to enhance the degree of information sharing and the raising of awareness on different aspects of the Year 2000 problem by both public and private sectors within the global financial markets.

The External Consultative Committee includes representatives from international payment and settlement mechanisms (such as S.W.I.F.T., Euroclear, Cedel, and VISA), from international financial market associations (such as the International Swaps and Derivatives Association, the International Institute of Finance, and the Global 2000 Coordinating Group), from multilateral organizations (such as the IMF, OECD, and World Bank), from the financial rating agencies (such as Moody's and Standard & Poor's), and from a number of other international organizations (such as the International Telecommunications Union, Reuters, the International Federation of Accountants, and the International Chamber of Commerce). This diversity of perspectives led to an extremely valuable discussion with the Joint Year 2000 Council and stimulated work on several projects to be taken forward with input from both the public and private sectors, for example, the initiatives on Y2K testing and self-assessment that I will describe shortly. Further sessions with the External Consultative Committee are planned on a quarterly basis.

It is important at the outset for me to be clear that the Joint Year 2000 Council is not intended to become a global Y2K regulatory authority, with sweeping powers to coordinate international action or to take responsibility for ensuring Y2K readiness in every financial market worldwide. Through our ability to serve as a clearinghouse for Y2K information, however, I believe that the Joint Year 2000 Council will play a positive role in three areas: (1) raising awareness, (2) improving preparedness, and (3) contingency planning. In the next portion of my remarks, I would like to address each of these roles in turn.

### Efforts to Promote Awareness

The Joint Year 2000 Council is undertaking a series of initiatives that may be described under the heading of promoting awareness. By this term, I do not mean to include only those initiatives aimed at raising general awareness, although that too is still needed in some cases. I mean to include efforts to promote better awareness of the many efforts currently under way to

tackle the Y2K problem. I have found that, while many organizations are working hard on various aspects of the Y2K challenge, in many cases these efforts would be enhanced by a greater degree of information sharing with others. For example, at the Federal Reserve Bank of New York, we have been holding quarterly Y2K forums with a diverse set of financial organizations in the area. Participants have requested that we continue to hold these meetings -- in fact, to hold them even more frequently -- because they believe that the contacts and the exchange of views are broadly beneficial. We hope to use the Joint Year 2000 Council to achieve similar goals.

Each of the members of the Joint Year 2000 Council has committed to help play a leading role in promoting awareness of Y2K initiatives within their region. Each of us will help in coordinating regional Y2K forums or conferences and will publicly promote the goals of the Joint Year 2000 Council in speeches and on conference programs.

The Joint Year 2000 Council will also maintain extensive world-wide-web pages that can be accessed freely over the Internet.<sup>3</sup> These pages are being maintained through the support the Council has received from the Bank for International Settlements, in particular from the General Manager, Andrew Crockett. These web pages will maintain current information on the activities of the Joint Year 2000 Council.

The most extensive aspect of the Council's web site will be a series of country pages, one for each country in the world. For each country, the page will contain contact information for government entities (including national coordinators), financial industry supervisors and regulators (including central banks, banking supervisors, insurance supervisors, and securities regulators), financial industry associations, payment, settlement and trading systems, chambers of commerce, and major utility associations or supervisors. For each of these organizations, a name, address, phone number, fax number, electronic mail and web site address will be provided. Other relevant information on an organization's Y2K preparations may also be included, for example, whether it has a dedicated Y2K contact or has taken specific action with respect to the Y2K problem.

The motivation for developing these country pages is to increase awareness of the work that is being done to address the Y2K problem and to enable market participants to easily find out more information about the state of preparations worldwide. Establishing these national contacts will also help to develop the informal networks and arrangements that may be needed in addressing other Y2K-related issues, for example, in formulating contingency measures. Finally, of course, the presence of the country pages may exert pressure on those countries where more vigorous action is needed. A blank or uninformative country listing would probably not be seen as a good sign by some financial market participants.

In addition, the web pages of the Joint Year 2000 Council will also provide summaries of the efforts being undertaken by its Sponsoring Organizations as well as links to the relevant web sites. For example, reports on Y2K surveys of supervisors and regulators being undertaken by the Basle Committee on Banking Supervision and by the International Organization of Securities Commissions are planned to be made available on the Joint Year 2000 Council web site. Public papers produced by the Joint Year 2000 Council will also be available on the web site. A listing of international conferences and seminars related to Y2K will be posted on the web site, together with links to other Y2K web sites and documents.

At this stage, each member of the Joint Year 2000 Council is in the process of finalizing the country page for its respective country. Last week, I wrote to every contact provided by

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<sup>3</sup> The web pages of the Joint Year 2000 Council can be reached at the web site of the Bank for International Settlements ([www.bis.org](http://www.bis.org)). These pages will also be registered under the name [jy2kcouncil.org](http://jy2kcouncil.org) in the near future.

the four Sponsoring Organizations (almost 600 contacts in over 170 countries), asking for assistance in coordinating the development of their country page. This also provided a further opportunity to raise the awareness of the Year 2000 problem at the most senior levels of financial market authorities and supervisors in countries around the world. Through the effort to develop this web site and other similar efforts by the Joint Year 2000 Council, I believe we can succeed at keeping the awareness of the issue at a very high level within the global financial supervisory community.

### Efforts to Improve Preparedness

Of course, awareness of the Year 2000 problem is only the first step in addressing it. Global efforts to prepare for Year 2000 vary widely, and many countries believe that more coordinated national action will be necessary to tackle the problem as effectively as possible. At our second meeting of the Joint Year 2000 Council, a strong consensus emerged that a national government body in each country could play a helpful role in coordinating preparations for Y2K. While the Council did not have a strong view on what particular form or what specific authority such a body would require in each specific country, the Council members felt strongly that involvement in some fashion by the national government could be beneficial.

Accordingly, the Joint Year 2000 Council plans to issue a statement in the near future providing general support for the concept of a national-level coordinating body for the Y2K problem. In the United States, of course, the White House has established the President's Council on Year 2000 Conversion, headed by John Koskinen. This effort, as well as those of this committee under the leadership of Chairman Leach, and of the other Congressional committees that have addressed the Y2K problem, has shown that national government bodies have a very important and useful role to play in encouraging progress in addressing the Y2K problem.

Turning now to the question of how financial supervisors can implement effective Y2K programs, the Joint Year 2000 Council intends to promote the sharing of strategies and approaches. For example, the Basle Committee on Banking Supervision has prepared a paper containing "Supervisory Guidance on Independent Assessment of Bank Year 2000 Preparations". This document is aimed at moving supervisors worldwide from a level of general awareness to a specific, concrete program of action for overseeing Y2K preparations, both on an individual bank basis and on a system-wide basis.

The Joint Year 2000 Council intends to adapt this paper for use by financial market regulators and supervisors more broadly and to issue it as rapidly as possible with the endorsement of all four Sponsoring Organizations. The goal will be to provide guidance in developing specific Year 2000 action plans for all types of financial market authorities. Supervisors in countries that have gotten a head start on the issue can thereby provide the benefit of their experience to those who are starting later. Those supervisors getting a late start have a need for tools of this type.

The Joint Year 2000 Council will also be working with the members of our External Consultative Committee, particularly the Global 2000 Coordinating Group, to build on this effort and develop a Y2K self-assessment tool that could be used broadly by the financial industry in countries around the world. We also intend to develop additional papers on a variety of Y2K topics that might be of interest to the global financial supervisory community.

At this point, I am sure that members of the Committee have questions regarding the state of Y2K preparations in various parts of the world. I think that it is fair to say that most believe a spectrum exists, with the United States at one end of the spectrum, and emerging market and undeveloped countries at the other end. There are likely exceptions of course; some developed

countries are probably less far along than they should be. Some emerging market countries, on the other hand, appear to be quite advanced in their preparations.

Overall, however, there is still not nearly enough concrete, comparable information on the preparations of individual institutions to be able to make any confident statements about the state of global preparations in any detail. Over the time remaining until January 2000, we hope to use the Joint Year 2000 Council as a means of gathering a better picture of the state of global preparations, and to help direct resources and attention to those regions that appear to be faltering in their efforts. We will use the information provided for our web site and the discussions with members of our External Consultative Committee as our primary resources in seeking to identify "hot spots" where more urgent efforts are needed.

If we identify regions where more needs to be done, our first step will be to work through the relevant national financial supervisors and regulators to increase the urgency of efforts in their jurisdiction. We may also involve multilateral institutions, such as the World Bank, to help increase national attention on the issue. I do not believe that calling public attention to problems in specific countries would be a constructive step for us to take at this stage as we are still trying to build cooperation and our current information is incomplete. In this context, I would also point out that the market itself will begin to bring strong pressures to bear on specific firms and markets that exhibit signs of being ill-prepared during the course of 1999.

In conjunction with preparations for Y2K, the recent discussion of the Joint Year 2000 Council with the External Consultative Committee raised several important issues. First, in every national market there is the question of the dependence of the banking and financial sectors on core infrastructure such as telecommunications, power, water, sewer, and transportation. In all cases, it seems that it is not an everyday occurrence for representatives of these differing sectors to get together with financial sector representatives and discuss their mutual concerns. Yet, this must be made a priority if financial firms and their counterparties are to achieve comfort that their own efforts to prepare for Year 2000 will not be compromised by the failures of systems beyond their control.

A representative of the International Telecommunications Union is a member of our External Consultative Committee. At our meeting earlier this month, he provided useful factual information on the preparations being undertaken by telecommunications firms and indicated that a further global survey and report on this topic is due to be completed soon. This is the type of information sharing that helps all parties understand the scope of the problem, as well as the efforts that others are undertaking. We intend to encourage further information sharing between the financial sector and core infrastructure providers at future meetings of the Joint Year 2000 Council and the External Consultative Committee. I would also strongly encourage such mutual cooperation on Y2K preparations within each national jurisdiction.

Another issue that some participants in our Joint Year 2000 Council are concerned about in regard to preparations in their countries relates to the availability of human resources. In some regions, the supply of available information technology professionals may be hard-pressed to meet the challenges posed by Y2K. For each organization facing resource constraints, this situation clearly indicates the need to develop action plans for Y2K that set clear priorities among systems and projects.

More broadly, we must also recognize that the lack of available programming resources will be a significant overall constraint on the scale of Y2K remediation efforts globally. As a result, the cost of hiring computer professionals capable of addressing the problem will continue to rise. Wealthy countries are undoubtedly in a better position to bear these increasing costs than are poor countries.

A number of participants from our External Consultative Committee cited the recent grant of £10 million sterling by the British Government to the World Bank as a positive development. Among other projects, the World Bank intends to use this grant to fund a variety of educational and awareness-raising events related to Y2K over the next several months. Given the potential consequences of a failure to prepare for Y2K, the World Bank indicated to the Joint Year 2000 Council that it intends to take on an aggressive role in promoting and assisting Y2K efforts in countries around the world. The Joint Year 2000 Council intends to work closely with the World Bank to enhance our mutual efforts on the Y2K problem.

The subject of appropriate Y2K disclosure was also discussed by members of the External Consultative Committee. Many of those present agreed that greater disclosures would be helpful. However, there was skepticism that a standardized disclosure format would be effective in eliciting meaningful information for a wide class of financial firms, given the complexity and variety of Y2K issues facing these firms worldwide. It was also noted that disclosure which relies primarily on a firm's own subjective assessments of its Y2K problems inevitably will suffer from an optimistic bias.

In addition, most Y2K efforts will not reach the serious testing phase until 1999. The purpose of the testing will be to uncover areas where additional work is required, so that the first round of tests can be expected to encounter problems. In this environment, it may be difficult for firms themselves to assess the true state of their Y2K preparations. Also, firms who believe they are going to be ready will be directed by legal counsel not to make too strong a statement to avoid liability claims in case of unforeseen problems. On the other hand, firms that do not believe they can get ready in time will seek to avoid stating this clearly to protect their activities during 1999. For all of these reasons, I am doubtful that specific, reliable information on the state of Y2K preparations by individual firms worldwide will become publicly available.

Finally, in the area of improving preparedness, I have saved the most important topic for last -- namely, testing. Testing programs, particularly external testing programs, are universally regarded as the most critical element of serious Y2K preparations in the financial sector. The Joint Year 2000 Council encourages all firms and institutions active in the financial markets to engage in internal and external testing of their important applications and interfaces. To this end, many major payment and settlement systems around the world have developed extensive testing programs and procedures for their participants. In the United States, for example, Fedwire, CHIPS, and S.W.I.F.T. have coordinated shared testing days for the purpose of testing the major international wholesale payments infrastructure for the US dollar. The Securities Industry Association ("SIA") has been at the forefront of an ambitious program to develop a coordinated industry-wide test of all aspects of the trading and settlement infrastructure for the US stock market. The FFIEC's efforts have also been extremely beneficial in stressing the importance of testing within the banking sector generally.

Yet, external testing programs globally need to be dramatically extended and expanded. To that end, the G-10 Committee on Payment and Settlement Systems last year started to collect information on the state of preparedness and testing of payment and settlement systems worldwide. To date, over 150 systems in 47 countries have responded to the framework and posted such plans.<sup>4</sup> The Joint Year 2000 Council intends to expand the coverage of this framework to exchanges and trading systems, as well as major financial information services providers, and hopes to expand the number of countries and systems that are included. We will also collate and present the information graphically to help highlight anomalies in testing schedules, and to facilitate the efforts of systems to coordinate test scheduling where feasible.

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<sup>4</sup> The relevant information can now be found on the pages of the Joint Year 2000 Council.



Primarily, I see this as an exercise in peer pressure. If we list every country in the world on our web site and the public can see that some countries have scheduled mandatory external tests of their major trading and settlement systems, while other countries do not provide any information, that second country may come under greater pressure to organize an external testing program. This is our stated goal. We will simply have blanks for those countries that do not respond to our requests for information.

Of course, if the Joint Year 2000 Council is going to encourage testing to such an extent, then it is only appropriate that we also help provide some tools for those countries trying to get a serious testing effort underway in a short amount of time. This is another of our high-priority projects. We will be working with members of the External Consultative Committee -- including representatives of the Global 2000 Coordinating Group, S.W.I.F.T., and the World Bank -- to rapidly develop a series of documents that help countries set up testing programs and overcome common obstacles. We intend to issue these documents broadly by the end of the summer, and some parts well before that.

In closing this section of my statement, I do not think it is possible to over-emphasize the importance of testing to help improve readiness. To illustrate this point, I would like to draw on our experiences with Fedwire, the Federal Reserve's wholesale interbank payments system. Much of the current Fedwire software application was written in the last five years, with the Y2K problem in mind. Nevertheless, some of the older software code that was carried over into the new application was not Y2K-compliant. Without the rigorous internal Y2K testing program that the Federal Reserve adopted, our Y2K remediation efforts might, therefore, have been incomplete. I think of this experience whenever I hear it said that some countries are immune to Y2K because they have only recently introduced information technology and that recent software programs are less affected by Y2K. I ask whether those programs have truly been thoroughly tested for Y2K compliance.

### Contingency Planning Efforts

The third major role of the Joint Year 2000 Council will relate to contingency planning. In this context, I should note that contingency planning is something that most financial market authorities, particularly central banks, undertake regularly with regard to a wide variety of potential market disruptions. Most private-sector financial firms, as well, have well developed contingency and business continuity plans in place for their operations.

Nevertheless, it is clear that contingency planning for Y2K problems has a number of unique characteristics. First, of course, is the fact that one cannot rely on a backup computer site for Y2K contingency if that site also uses the same software that is the cause of the Y2K problem at the main site. In some cases, it is impractical to build a duplicate software system from scratch simply to provide for Y2K contingency. In these cases, as a senior banker explained at one of our New York Y2K forums, contingency planning amounts to, "Testing, testing, and more testing."

Contingency planning can also be separated into components that are firm-specific and those that are market-wide. Each individual firm will need to develop its own contingency plans designed to maintain the integrity of its operations during the changeover to the Year 2000. The FFIEC has recently issued guidance to banks in the United States regarding the core elements of their own contingency planning.<sup>5</sup> The Joint Year 2000 Council will also be developing a paper on contingency planning for the benefit of the global financial supervisory community. This paper will seek to address firm-level contingency as well as issues of market-wide contingency.

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<sup>5</sup> See [www.ffiec.gov/y2k/contplan.htm](http://www.ffiec.gov/y2k/contplan.htm)

Market-wide contingency refers to the planning by participants and supervisors done to ensure that individual disruptions can be managed in ways that will prevent them from causing disruptions to critical market infrastructures. For instance, we at the Federal Reserve have gone to great lengths to ensure that barriers are in place to prevent Y2K problems with a Fedwire participant from causing problems on the Fedwire system itself. We are also now actively researching additional steps that the Federal Reserve could take to better prepare the financial markets as a whole to function in spite of disruptions at individual firms.

It is also important to realize that contingency planning for Y2K is not solely an operational issue. Financial firms may seek to adopt a defensive posture in the marketplace well ahead of Monday, January 3, 2000 (the first business day of the new year in the United States). For example, market participants may seek to minimize the number of transactions that would be scheduled for settlement on January 3 or January 4, or that would require open positions to be maintained over the century date change weekend.

Contingency planning involves a series of elements, many of which must be put in place well before January 2000. For example, we must consider many possible sources of disruption and determine what approaches could be available to limit the impact of each possible disruption. The sooner such thinking occurs, the more opportunity we have to plan around the possible disruptions. In this context, members of our External Consultative Committee noted that one of the key obstacles to effective contingency planning is the inability to list and consider all possible disruption scenarios. Several of these participants noted that their firms were engaging consultants or other procedures to expand the number of scenarios for inclusion in their Y2K contingency planning.

In New York, we will be using our Y2K forum next month to discuss contingency planning with a diverse set of market participants. These local market participants will provide helpful insights for the Joint Year 2000 Council. Clearly, more work is needed on contingency planning for Y2K, especially at the international level. Once we get beyond the early fall of this year, I believe that these efforts will begin to receive much greater focus and attention, and -- together with testing -- will dominate our discussions of Y2K during 1999.

### Closing Remarks

In closing, I would like to thank the Committee for the opportunity to appear and submit a statement on this important issue. I hope that the efforts of the Joint Year 2000 Council will help to make a difference in improving the state of Y2K preparations in the international financial community. Realistically, however, I believe that it is important to understand the limits of what financial market supervisors can accomplish, either individually or collectively. Only firms themselves have the ability to address the Year 2000 problems that exist within their own organizations. Only firms working together can assure that local markets will function normally. Supervisors and regulators cannot guarantee that disruptions will not occur.

Given the sheer number of organizations that are potentially at risk, it is inevitable that Y2K-related disruptions will occur. Today it would be impossible to predict the precise nature of these disruptions. However, we do know that financial markets have in the past survived many other serious disruptions, including blackouts, snow storms, ice storms, and floods. We will also have a very interesting case at the end of this year with the changeover to monetary union in Europe. We will all be watching carefully to see whether the extent of operational problems related to this event is greater or less than expected.

I would also like to say at this point that my discussions with other members of the Joint Year 2000 Council and with members of the External Consultative Committee have convinced me that successful efforts to address the Y2K problem will be dependent on the credibility of those calling for action. Those of us — such as members of this Committee as well as others in Congress — who are seriously engaged and concerned need to be able to persuade others of the need to take appropriate actions promptly. It would be unfortunate if general perceptions of the Y2K problem are driven primarily by unofficial commentators whose rhetoric is seen to exceed the facts on which it is based, and therefore easily dismissed.

As a central banker and bank supervisor, my major concern must be with the system as a whole. At this point, I believe that we are doing everything possible to limit the possibility that Y2K disruptions will have systemic consequences in our markets. However, we must all continue to work hard -- both individually and cooperatively -- in the time that remains to ensure that this threat does not become more concrete.

In that spirit, Mr. Chairman, I would like to end my remarks by commending the Committee for organizing these hearings on the implications of the Year 2000 computer problem for international banking and finance.