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THE FBIIC/FSSCC PANDEMIC FLU EXERCISE OF 2007 AFTER ACTION REPORT

U.S. Financial Services
Sector Exercise Results
January 2008

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FBIIC FSSCC SIFMA
U.S. Department of the Treasury

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United States Department of the Treasury

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To All Participants,

The FBIIC/FSSCC Pandemic Flu Exercise of 2007 was both an unprecedented event and a success on many different levels. As the sponsors of the exercise, we would like to take this opportunity to thank everyone who participated, as well as those who helped make the exercise possible.

More than 100 individuals from the public and private sectors worked collaboratively to develop the exercise, a testament to the strength of the financial services sector's public-private partnership. Additionally, we appreciate the input from the experts from outside the financial services sector on important issues such as health care, technology, energy, transportation, and telecommunications.

With more than 2,700 financial organizations voluntarily registering to participate, there was both a clear need and a great value for conducting an exercise on this scale within the United States. Factoring both the number of organizations and the teams they employed to test their plans, the exercise likely involved tens of thousands of individuals. This overwhelming participation provides further proof of the importance that the financial services sector places on business continuity. We appreciate the time and effort that participants devoted to the exercise by working through the scenario and answering the questionnaires. Those questionnaires resulted in some 400,000 responses that were then sorted, analyzed, and winnowed by the members of the exercise steering committee into the findings of this report.

We know that providing the opportunity for organizations to test their plans against a realistic scenario improved awareness of key issues across the sector, as nearly 99 percent of participants said the exercise helped to gauge their organization's pandemic business continuity planning needs. This report is an effort to help these organizations benchmark their plans. Using the exercise findings to enhance the financial services sector's preparedness for a pandemic will be the greatest outcome.



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Executive Summary

Beginning September 24, 2007, more than 2,700 U.S. financial services organizations participated in a 3-week exercise simulating a severe global pandemic flu. The scenario for this exercise posed a realistic picture of the possible systemic risks to the sector and its dependencies on other critical infrastructures. Based on the findings of this exercise, it appears that while there will be significant impacts to the financial services sector, the sector overall will continue to operate and cope with these impacts.

This free and voluntary exercise provided organizations from the banking, insurance and markets (securities and derivatives) industries, as well as financial utilities, trade associations, and regulators, an opportunity to assess their pandemic plans against a rigorous and detailed scenario. The scenario was developed by a team of technical experts from diverse disciplines that few organizations have the ability to tap on their own.

The exercise was designed to use progressive absenteeism rates – reaching as high as 49 percent – to stress the contingency plans of participating organizations. Critical infrastructures that the financial services sector relies on were also stressed during the exercise to simulate likely degradation in available services. Through this approach, the sector was able

to gauge how their individual organizations and markets might be expected to cope with different levels of a pandemic.

The exercise highlighted the need for organizations to include a pandemic-specific focus in their overall business continuity planning efforts. At the start of the exercise, more than one-third of participants stated that they had not yet developed pandemic-specific business continuity plans. However, after the exercise 91 percent of participants said they would apply lessons they learned from the exercise to refine their organizations' business continuity plans.

This report details the results from this exercise including how the exercise was constructed by the financial services sector through a public-private partnership, the findings from the exercise, and future considerations for the sector and the regulators.

Based on the exercise results, it is apparent that financial organizations of different sizes have different needs and responses to the challenges posed by a potential pandemic flu epidemic. The participating organizations ranged in size from very small—less than 250 employees—to the largest institutions in the country—with more than 100,000 employees. For example, while high rates of absenteeism would be a universal problem during a pandemic flu, large organizations plan to rely more heavily on

telecommuting, while small and medium organizations are more likely to use social-distancing strategies such as staggered shifts, personal space limitations, and personal protective equipment (PPE). The exercise findings indicated that although many organizations included telecommuting as part of their plans for social distancing, relatively few employees telecommuted during the exercise. Testing of computer systems used for telecommuting by staff performing critical functions remains an issue, with large and medium organizations generally reporting that they have done so for less than half of such staff, and most small organizations reporting having done so for less than 5 percent of such staff.

Telecommuting and cross-training employees are only two examples of how organizations plan to manage their human resources constraints. Other human resources management considerations include educating employees about individual preparedness, determining organizational policies about using vacation time, sick leave, and offering special incentives, as well as the distribution of anti-viral medication and PPE. During the peak pandemic period of the exercise, 88 percent of participants indicated that their organizations either did not have stockpiles of anti-viral medications or had decided not to distribute them. Organizations indicated that they would be far more likely to stockpile

PPE than anti-viral medications. Fifty-four percent of organizations had PPE and distributed it during the height of the pandemic. Large organizations were slightly more likely than small and medium organizations to reserve such equipment for workers who perform critical functions. The majority of organizations indicated that they were replenishing or creating new stockpiles of PPE by the time the peak scenario period subsided.

Communications strategies for customers, employees, and suppliers is another widely recognized component in pandemic plans. At the beginning of the exercise, more than 80 percent of respondents indicated that communications plans were in place to provide information to employees, customers, and suppliers during a pandemic. At the close of the exercise, the majority of participating organizations reported that these plans were judged to have been moderately effective. Overall, most organizations reported that their existing HR policies were moderately effective in meeting workforce needs during a pandemic.

In addition to the effects at individual organizations, the issue of dependency on other sectors, such as transportation, telecommunications, and energy, was a key component to the exercise. Leveraging the experience and skills of public and private sector experts, the exercise scenario was designed to provide descriptions of the effects of a pandemic on other sectors to enable

EXECUTIVE SUMMARY

participants to better understand the issue of interdependency. While standard business continuity plans often include provisions for vendor services, these service providers will likely suffer similar levels of absenteeism and reduced levels of operations and services during a pandemic flu. Overall, the majority of participants indicated that they understood their external dependencies and that their plans, based on the exercise scenario, were moderately effective at addressing these dependencies. However, 97 percent of participants stated that more attention to these dependencies is warranted.

By providing an opportunity to test plans, and identify systemic risks and critical dependencies on other sectors through this exercise, 99 percent of exercise participants felt that the exercise met its objectives and was useful in assessing their pandemic planning needs. As a result, the exercise provided the participants the opportunity to examine key crisis management issues, foster strategic thinking, and strengthen the sector's overall preparedness.

On the whole, the exercise revealed that the largest firms have planned extensively for a possible pandemic. This work was a key contributor to the sector's overall ability to continue to conduct critical functions and keep markets viable for the short term even as the simulated absenteeism rate moved up toward 49 percent. In fact, the exercise showed that there was little impact on some operations for short periods at 25 percent absenteeism and generally at 35 percent as well.

The exercise did point out a variety of issues that can be addressed to further strengthen the sector's ability to weather a pandemic. These issues differ widely by organization. Each organization will need to judge the value of potential enhancements to their strategies and plans and incorporate those that suit their individual situation.

In examining the exercise results, it is apparent that the financial sector's pandemic response planning involves a layered approach incorporating social distancing techniques, telecommuting, cross-training, communication to employees and customers, and distribution of PPE, as well as special arrangements with service providers.



Introduction

Background

The financial services sector, including the financial regulators and private sector firms, has a history of working collaboratively to maintain a high degree of resilience in the face of myriad potential disruptions. This collaboration has led to a comprehensive framework for a strong public-private partnership. In the public sector, the Financial and Banking Information Infrastructure Committee (FBIIIC), chaired by the U.S. Department of the Treasury, brings together the Federal financial regulators and the associations of State financial regulators to address and coordinate issues related to the security and resilience of the U.S. financial sector. In the private sector, the Financial Services Sector Coordinating Council for Critical Infrastructure Protection and Homeland Security (FSSCC) brings together financial services trade associations and individual firms. In addition, the private sector has developed regional partnerships and created the Financial Services Information Sharing and Analysis Center (FS-ISAC), which is a mechanism for sharing accurate and timely information.

The FBIIIC/FSSCC Pandemic Flu Exercise of 2007 was an outgrowth of the extensive work conducted by the Securities Industry and Financial Markets Association (SIFMA) on business continuity issues in general, and on pandemic preparedness in particular. Following the successful industry pandemic flu exercise conducted by financial authorities in the United

Kingdom, SIFMA approached the FSSCC indicating that it would be conducting a pandemic flu exercise in lieu of its annual connectivity tests in 2007. FSSCC proposed expanding such an exercise beyond the securities industry to cover the entire financial services sector. This prompted SIFMA and the FSSCC to seek the Treasury Department as a partner for the exercise. Working through the FSSCC and the FBIIIC, the Treasury Department and SIFMA developed a proposal to organize the exercise planning, objectives, and operations. Through these discussions, the FBIIIC and the FSSCC expanded the scope of the exercise to include the entire U.S. financial services sector. This decision was made largely in response to the work of the FSSCC Infectious Disease Forum and the President's *National Strategy for Pandemic Influenza*.^{*} Both the forum and the strategy recognize that a pandemic influenza could present unique challenges resulting from—

- » High levels of absenteeism over a prolonged period of time
- » Global impact of a widely dispersed infection
- » Disruptions across critical infrastructures

Exercise Overview and Objectives

This voluntary pandemic flu exercise was the largest financial services sector pandemic exercise in the United States. The exercise was

^{*} This document is available at <http://www.whitehouse.gov/homeland/nspi.pdf>

available free of charge to all financial institutions with operations in the United States and was conducted through a secure website hosted by SIFMA. More than 2,700 financial organizations participated, and their anonymity was respected and maintained so that no organization's responses were attributed to it or revealed to regulators.

The exercise was designed to provide a realistic pandemic scenario that gave participants an opportunity to examine the key issues that might emerge from a protracted crisis. A potential global outbreak of influenza resulting from a flu strain that is transmissible from person to person could cause serious illness because there may be little natural immunity and a limited amount of prepared vaccine. Consequently, a global influenza outbreak could pose a serious threat to the financial services sector. Many organizations within the sector had done significant planning for the pandemic threat, and needed an opportunity to test and benchmark their plans. Other organizations had only traditional continuity plans that focus on disruptions that are limited in time, in geography, and often in impact. However, pandemic planning is different because a pandemic will be widely dispersed and affect multiple locations; may last several months and occur in waves; may cause extensive and protracted absenteeism; and may stress interdependencies among sectors.

There were three objectives for the exercise—

- » Enhance the understanding of systematic risks to the financial sector
- » Provide an opportunity for firms to examine the effectiveness of their pandemic plans
- » Explore how the effects of a pandemic flu on other critical infrastructures will impact the financial services sector

Document Purpose and Description

This report provides a detailed description of the following:

- » Development and implementation of the exercise
- » Macro-level findings for the overall financial services sector
- » Industry-specific findings for certain topic areas
- » Possible future considerations

The aggregated and analyzed findings in this report are derived from the responses to the online questionnaires for each of the three weeks of the exercise.

Although the report does address regulatory issues, nothing contained herein should be interpreted as addressing the authority and/or likelihood of the appropriate regulatory agencies granting waivers or providing other forms of regulatory relief.

Organization & Operations

To plan and develop a scenario for such a large-scale exercise, the Treasury Department, the FBIIC, the FSSCC, and SIFMA created a working group structure based on the exercise format that was used for the United Kingdom's Financial Sector Market Wide Exercise 2006.* More than 100 individuals from the public and private sectors worked collaboratively to develop the exercise.

The Committee Structure

Steering Committee

The exercise steering committee provided overall direction and guidance for the scenario framework and outreach to the financial services sector participants. The steering committee included 21 representatives from the public and private sectors who met weekly. In August, the steering committee conducted two separate test-runs of the exercise to find and address any weaknesses in the exercise structure. During the exercise, the steering committee met to conduct a "status check" on the progress of the exercise. Finally, the members of the steering committee were involved in analyzing the data and preparing this report.

* See *UK Financial Sector Market-Wide Exercise 2006 Report*, available at <http://www.fsa.gov.uk/pubs/other/mwe2006.pdf>

Project Planning Team

The project planning team consisted of all of the working groups (design and development, technology, communications, and control teams), which were responsible for the exercise scenario design, website development, consistent messaging and outreach to the sector, and exercise management. In total, the project planning team had 72 members. In addition to the project planning team, more than 30 resource planners provided subject matter expertise for such areas as medical, technology, and critical infrastructure.

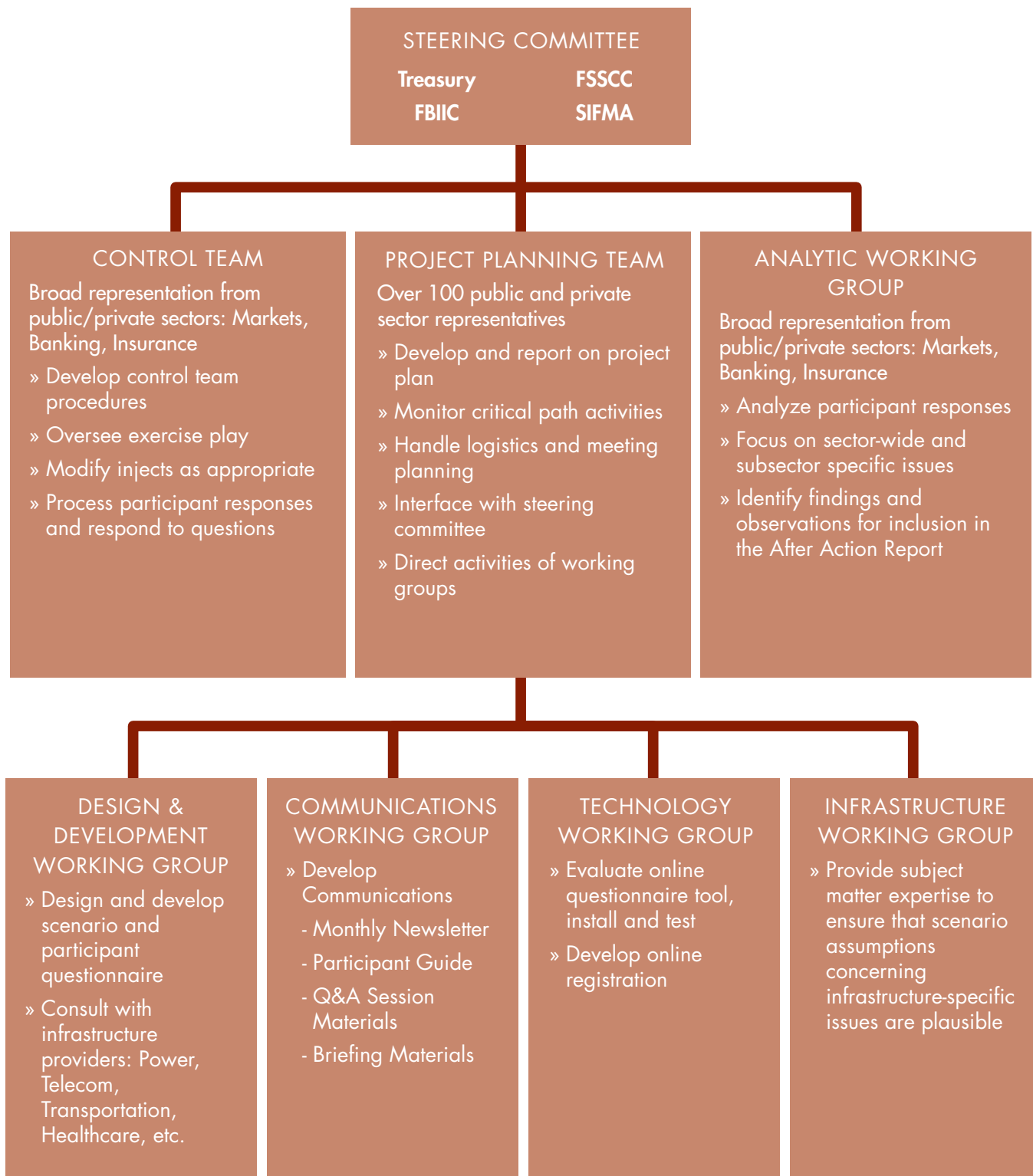
Working Groups

DESIGN AND DEVELOPMENT WORKING GROUP

The design and development working group created the scenario for the entire 3-week exercise, including the weekly scenario updates and the online questionnaires. This working group was divided into three sub-working groups, which focused on medical, financial, and societal scenario components, respectively.

TECHNOLOGY WORKING GROUP

The technology working group designed the exercise website, the online registration portal, and the online questionnaire tools for the exercise, and oversaw security and performance testing. SIFMA developed, maintained, and



FSSCC/FBIIC Pandemic Exercise—Committee Structure

hosted the exercise website, which served as the resource center for the exercise participants. With the assistance of the FS-ISAC, the technology working group was able to tailor an online questionnaire tool for the specific needs of this exercise.

COMMUNICATIONS WORKING GROUP

The communications working group was responsible for outreach to the sector and for consistent messages about the exercise. Initially, the group drafted the public announcements about the exercise and registration procedures. Throughout the planning process, the group developed all of the documents for the exercise website, including a business case model for participants, participant guides, briefing materials, and frequently asked questions. In addition, the working group managed the overall public affairs strategy for the exercise.

CONTROL TEAM

The control team included broad representation from the private and public sectors and was responsible for overseeing the exercise play and for modifying the scenario updates as appropriate based on participant responses to the online questionnaires. During the exercise, the control team analyzed the previous week's questionnaire results to determine if any aspect of the next week's scenario update needed to be modified. This group also participated in analyzing the overall findings for this report.

ANALYTIC WORKING GROUP

The analytic working group consisted of steering committee and control team members. At the conclusion of the exercise, the group analyzed the data and generated the findings for this report.

Exercise Framework and Scenario

Development of Exercise Framework

To create the scenario, the sub-working groups of the design and development working group used the exercise objectives to frame the medical, financial, and societal impacts of a pandemic. These groups considered the unique challenges posed by pandemic influenza and the means to address these challenges. These included extensive long-term absenteeism, the need for social distancing, telecommuting, cash management, human resources management, market impacts, and other potential issues that may arise.

To create a plausible medical scenario, the medical sub-working group met with the Department of Health and Human Services (HHS)/Centers for Disease Control and Prevention (CDC) and used their *Community Mitigation Guidelines for a Pandemic** to provide information about non-pharmaceutical measures (i.e., personal protective equipment [PPE]), anti-virals, and pre-pandemic vaccines.† The medical sub-working group also used the CDC's flu aid and flu surge models to calculate estimated hospitalizations and deaths for this scenario based on a modified flu surge formula from a 1918-type flu pandemic. This group identified a plausible

* Further information on HHS/CDC Pandemic Flu Guidance is available at <http://www.pandemicflu.gov>.

† Personal protective equipment includes respirators, surgical masks, gloves, and other medical supplies that can be purchased by employers and individuals.

starting point for the initial outbreak of the pandemic and used the World Health Organization's alert phases and the U.S. response stages as benchmarks for the scenario. The medical sub-working group also highlighted social-distancing measures for the participants and created scenario and questionnaire inputs focused on community mitigation, medical supplies, and anti-viral prophylaxis.

To develop the financial impact components for the exercise, the financial sub-working group devised plausible macroeconomic impacts, market fluctuations, and liquidity concerns that would impact the sector overall. Financial scenario inputs and questions were categorized into three areas: banking, markets (securities and derivatives), and insurance. The scenario inputs were designed to stress participants' businesses from perspectives such as broad market impacts (both macroeconomic and with regard to liquidity); damage to critical infrastructure on which financial sector businesses depend; and possible changes in customer behavior (such as an increase in demand for online services). The related questions focused on the participating financial organizations' internal preparations and the extent to which they would depend on third parties. The questionnaire examined the impacts on participants' operations, their service levels to customers, and their policies. The questionnaire also inquired about how participants intended to meet their obligations in light of the scenario, participants' preferences for market policies (including issues such as modifications to times for trading, clearing, and settlement), and difficulties that organizations would encounter.

The societal sub-working group created scenario inputs simulating impacts on other sectors on which the financial services sector depends, as well as other indirect impacts on the operations of the sector. Key components included transportation concerns, fuel availability, power supplies, postal and courier services, school closings, and telecommunication and internet services. In addition, planners included information about alternative employee worksites, travel advisories, and the impact of the absenteeism levels at third-party service providers. By including this information in the scenario, the exercise offered participants an opportunity to test their business continuity plans in light of their organization's reliance on other sectors.

Scenario Overview

This section presents an overview of the storylines and sequence of events that were portrayed in the exercise scenario.

SPREAD OF THE PANDEMIC

At the start of the pre-phase scenario, clusters of a highly human-to-human transmissible strain of the H5N1 virus were confirmed in Africa, the Middle East, Europe, and South Asia. By 6 weeks (scenario update 2), the virus had reached pandemic levels across the United States, and corresponding absenteeism rates reached a peak of 49 percent. Eight weeks later (scenario update 3), the United States and other areas affected early in the pandemic were entering a recovery period, and the number of reported cases began to peak in South America, northeast Asia, the Pacific, and the Australian continent.

HEALTHCARE SECTOR

Hospitals, particularly intensive care units, quickly became overwhelmed after the virus reached the United States. Ventilators, available hospital beds, and trained personnel were scarce. Anti-viral supplies in the United States were exhausted by the midpoint of the pandemic wave, and CDC estimated that the initial shipment of vaccine tailored to this strain of pandemic flu would not be available for several more months. The beginning of the recovery period was marked by CDC announcing that there was a possible second wave of the pandemic.

ECONOMIC AND FINANCIAL MARKET

Economic effects were large, as many sectors, especially real estate and retail, witnessed a sharp decline in demand. The U.S. gross domestic product fell 1.5 percent below the pre-pandemic level. Stock market activity was affected and a flight to quality was witnessed early on in the crisis. Volatility remained high, and U.S. stock prices declined until the recovery period, when the negative macroeconomic shocks to the U.S. economy eased.

SCHOOL CLOSINGS

As the pandemic began to spread across the United States, K-12 schools, universities, and daycare facilities across the country began closing, further increasing absenteeism rates among working parents. Most university systems and approximately half of all urban public school systems were using electronic means to provide students with course materials.

ELECTRIC, GAS, TELEPHONE, AND INTERNET SERVICES

Absenteeism forced electricity, gas, telephone, and internet service providers to shift all available personnel to address emergency calls. Maintenance work was deferred. Some major urban areas were experiencing daily 2-hour rolling blackouts or brownouts between 8:00 a.m. and 8:00 p.m. The increased use of the internet for distance-learning and recreation resulted in decreased online performance in areas where schools were closed. By the peak of the pandemic, major “first/last-mile issues*” created broad impacts across access networks, and residential internet service throughput was reduced to 50 percent of normal.

POSTAL, OVERNIGHT, COURIER, AND ARMORED VEHICLE

Delays in mail delivery by both the U.S. Postal Service (USPS) and by private delivery services began at 2 days in scenario update 1 and reached 7 to 10 days by the pandemic’s peak. Absenteeism created major backlogs and the USPS was no longer able to provide its 48-hour delivery service. Armored vehicle services witnessed a spike in demand from myriad sectors, including the health and financial services sectors, which they were unable to meet.

TRAVEL, TRANSPORTATION, AND FUEL

Early in the pandemic, the U.S. Department of State reiterated warnings against travel to affected areas. As a result, 10 percent of flight crews refused to fly. As the pandemic spread, air and land travel in the United States underwent a

* “First/last mile issues” refers to congestion (and consequent degradation of service) over the communication lines between the customer’s computer and the nearest Internet point-of-presence.

40 percent reduction. Mass transit was deeply impacted with half of the regular riders unable to use it or intentionally avoiding it. Gas prices increased significantly as refinery production stalled, thus reducing supply levels.

FACILITIES SECURITY AND PROPERTY MANAGEMENT

Routine waste management was affected by absenteeism rates, and garbage piled up along city streets. Vendors who provide outsourced services to financial institutions, including facility security and property management, experienced high absenteeism rates, which resulted in a degraded capability to meet building safety standards. Regular facility management was also deferred.

SOCIAL, PUBLIC, AND SPORTING EVENTS AND ACTIVITIES

Social, public, and sporting events and activities were affected early in the pandemic by rising public safety concerns over infection. In an attempt to contain the spread, local governments canceled many events. Likewise,

restaurants, parks, and other public sites experienced a reduction in the number of visitors. As the pandemic worsened, some cities instituted curfews to relieve stress on local law enforcement, and the majority of these curfews remained in place through the end of the exercise.

Key Exercise Design Decisions

From the outset, the steering committee needed to address several key issues—

- » Duration of the exercise
- » Absenteeism model and rate for weekly scenario updates
- » Regulatory relief

Duration of the Exercise

The first issue the steering committee addressed was the duration of the exercise. Members agreed that taking the sector through an entire pandemic wave would require multiple weeks. However, this issue was balanced by the need to keep the exercise to a manageable timeframe for participants and by concerns over the potential for “exercise fatigue.” Thus, the steering committee agreed to have three weeks of formal exercise preceded by a week for pre-phase planning. Consequently, simulation of a 12-week pandemic wave was condensed into a 3-week timeframe; exercise week 1 simulated weeks 1 and 2 of the wave, exercise week 2 simulated weeks 3–6, and exercise week 3 simulated weeks 7–12. Each week of exercise began with an appropriate scenario update.

Absenteeism

Formulating the absenteeism rate for each scenario update was critical in determining the extent of the impact on the sector. The steering committee and the medical sub-working group determined that the absenteeism rate should begin at 25 percent, which is greater than that of the seasonal flu rate, for the first scenario update. During the second scenario update, the peak of the pandemic wave, the absenteeism rate should increase to 49 percent, which is greater than CDC’s projected 40 percent rate. The groups decided to increase the peak rate to add stress to the sector and test its resilience. As the peak began to decline, the groups concluded that the absenteeism rate would decrease to 35 percent in the final scenario update. The exercise absenteeism rate was applied to all sectors of society, including the financial sector.

For the purposes of the exercise, the term absent was defined as “an individual who is absent from the workplace and unable to work, even if he or she has telecommuting capabilities.”

The planners created an absenteeism model using the first letters of employees' last names, relying on U.S. census figures for the distribution. Each scenario update package included an absenteeism distribution specifying which employees would be absent as a way to approximate the scenario's target absenteeism rate. The letters were provided to participants one week in advance so that each organization had adequate time to review its human resources records, identify the absent individuals, and determine the distribution of the absent employees among their various departments/units as appropriate. This method provided a realistic picture of the range of absent employees, which could be from the lowest levels to the top of an organization. Organizations that did not want to carry out such a review of their records were allowed to simply use the provided absenteeism rate (25 percent, 49 percent, and 35 percent) for each scenario update.

Regulatory Relief

Highlighting what regulatory relief might be sought at different points and under different conditions during a pandemic was an important part of the exercise. Information on the issue was sought from the private sector participants during each scenario update. Financial regulators helped develop the exercise and also participated on the control team. A decision was made not to provide simulated relief from any specific regulations as part of the exercise. Instead, participant responses were gathered for use in continuing discussions between regulators and industry.

The regulators were also invited to take part in the exercise to test their own organizations' plans. However, regulators did not "play the role" of supervisors or regulators during the exercise and were not provided with any information about individual participating firms.

The Participants

The FBIIC and the FSSCC encouraged all members of the financial services sector to participate in this free and voluntary exercise to test their organization's pandemic plans. The exercise was designed to be flexible so that participants could commit resources depending on their organization's preferences.

Protecting Anonymity

Protecting the anonymity of the participants allowed participants to provide candid answers to the questionnaires and be confident that their responses would not be attributed to specific organizations or individuals. Registration information that identified the participating organizations was held solely by SIFMA, although a small team of SIFMA and FSSCC members reviewed registration forms for eligibility before the exercise and apart from answers to the questionnaires. Anonymity was preserved by assigning an identification number to each participant upon registration. This number was the only identifier attached to the received questionnaire responses.

Registration Process

The registration period opened three months before the start of the exercise. Interested organizations completed a registration form on the exercise website. The registration form asked for primary and secondary points of contact (POC) along with demographic data about the organization, including type of institution, lines of business, primary location by region, number of employees, assets, and revenue (see Appendix B). This information was used to perform aggregated analyses of the sector's response to the questions posed. Registrants were reviewed manually by private sector representatives from the FSSCC to ensure that each organization was a member of the financial services sector. After being approved, participants received access to the secure portion of the website, which contained procedural details and background material.

Although the identity of participating organizations was kept confidential, the demographic data were used to understand how specific types of organizations were answering the questions.

Outreach to the Sector

The communication strategy was focused on outreach to the sector to build awareness about the exercise and to explain how to register and participate. The Treasury Department, the FSSCC, and SIFMA participated in media briefings, issued press releases, and conducted industry calls in advance of the exercise. In addition, trade associations and other financial regulators sent information to organizations in the sector.

The website proved useful as a communication tool, providing registration announcements, registration information, frequently asked questions, and a business case presentation for those who needed to promote the exercise within their organization.

To help participants prepare for the exercise, the steering committee held three industry-wide calls open to all registered organizations. These calls provided participants with an exercise overview, the format of the exercise play, the absenteeism model, and an opportunity to ask questions. These calls were highly successful, with more than 2,000 registrants participating.

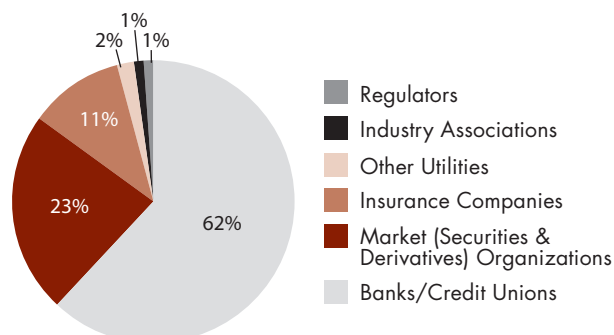
Breakdown of Participants

During the registration process, registrants provided demographic information about their organizations. Each registrant also indicated the subsector(s) in which his or her organization conducts its primary business (i.e., banking, insurance, and securities/derivatives markets), its geographic location(s), and other information about the organization's size (i.e., number of employees, assets, and revenue).

The majority of registrants, 62 percent, indicated that their organizations engaged in banking activities. Securities/derivatives market participants made up the second largest group (23 percent), followed by insurance organizations (11 percent). Other participants represented industry associations, regulatory bodies, and industry utilities (see Fig. 1).

FIG. 1

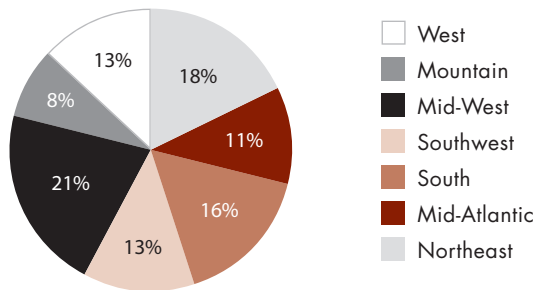
Distribution of Registered Organizations Among Industry Subsectors



THE PARTICIPANTS

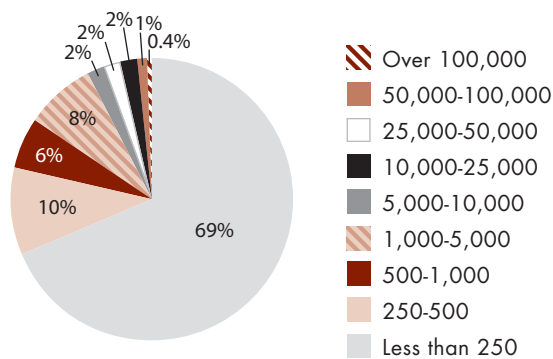
Registrants were fairly evenly distributed across the United States, although the Mid-West (21 percent of registrants) had a slightly larger representation than other regions of the country (see Fig. 2).

FIG. 2
Geographic Distribution of Registered Organizations



The smallest organizations in the sector (i.e., those with 250 employees or fewer) accounted for the greatest number of exercise registrants (69 percent). Only 15 percent of registrants indicated they had more than 1,000 employees. Of those 15 percent, approximately 1 percent had more than 50,000 employees (see Fig. 3). That said, over 90 percent of the nation's top 50 banks and thrift holding companies registered.

FIG. 3
Numbers of Employees in Registered Organizations



Construct of the Exercise

The exercise was conducted online from September 24th through October 11th. Although the control team met in person each week of the exercise, participants were able to download the scenario and respond to the weekly online questionnaire from their own worksites.

Release of Scenario Updates

A month before the start of the exercise, registered participants were provided with a briefing book containing facts and information about pandemic influenza. One week prior to the start of the exercise, planners released a pre-phase scenario. This enabled participants to gain better insight into the format, tone, and types of information that the scenario would include during the course of the 3-week exercise.

Every Monday of the exercise, a new scenario update (scenario update 1, scenario update 2, and scenario update 3) was released with information on the medical, financial, and societal impacts, the absenteeism distribution, and the questionnaire for that week. Additionally, each participant's primary POC received an e-mail every Monday with a link to the online

questionnaire to submit their responses, which were due by 5:00 pm EDT each Wednesday of the exercise.*

Online Questionnaire

The online questionnaire served as a tool through which participants provided responses weekly. Each of the sub-working groups crafted a series of questions related to its area of expertise. The steering committee vetted those questions, reducing the number of questions to about 250 for the three weeks of the exercise. Certain questions were intended for participants in the banking, securities/derivatives markets, or insurance sectors, and participants were not required to answer all questions. To facilitate efficient analysis of the results, most of the questions were in multiple choice format, although some key questions allowed for free-form text answers. Because responses could be evaluated based on the type, location, or size of the participating organizations, this questionnaire produced several hundred thousand individual answers. What follows are the key findings from the aggregation of the exercise responses.

* Columbus Day, a Federal holiday, occurred during the final week of the exercise. Consequently, participants had until 5:00 pm EDT on Thursday of that week to submit their responses.

Findings

Overall Statement

This section presents an analysis of the data obtained from responses to the exercise's three questionnaires. Responses from organizations with similar demographic characteristics (e.g., size, industry subsector) were aggregated. This information enabled an organization's responses to be analyzed from multiple perspectives, to be grouped with responses of other participants with similar characteristics, and to be tracked over the course of the entire exercise.

At the conclusion of the exercise, the analytic working group, composed of steering committee and control team representatives, met to review and analyze the responses. Because the exercise generated a large amount of data, the scope of the analysis generated high-level insights that relate directly to one or more of the exercise objectives, specifically the following:

- » **Objective 1:** Systemically critical. Do the responses contain information that would help define a threshold at which the industry is experiencing significant problems?
- » **Objective 2:** Testing plans. Does the information from the responses help organizations benchmark their plans in a meaningful way?
- » **Objective 3:** Other infrastructures. Does the information from the responses demonstrate key dependencies that require additional attention?

The analytic working group studied the findings from a sector-wide perspective as well as from the following subsector perspectives: banking, markets (securities and derivatives), and insurance. To generate high-level findings at the sector and subsector levels, some of the categories of demographic information collected during the registration process were combined. The analytic working group examined each questionnaire response according to the size criteria shown below, and where applicable, tracked responses to questions asked over multiple weeks.

Size Criteria	Small	Medium	Large
Number of Employees	<500	500—25,000	>25,000

Although more than 2,000 participants provided responses to the questionnaires, this population does not represent a scientific sampling of the financial services sector because exercise participants were self-selected rather than randomly selected. The exercise was voluntary and was available to organizations that decided to participate. The organizations that decided to participate might have unique characteristics that differentiate them from financial organizations that decided not to participate, and thus the findings are not necessarily indicative of the sector as a whole.

General Exercise Findings

The data and findings generated by the exercise provide valuable insights to enhance the understanding of systematic risks to the financial sector during a possible pandemic flu. Based on the findings of this exercise, it appears that although there will be significant impacts on the financial services sector, the sector will continue to operate and cope with these impacts. Individual organizations will have different stress points depending on their planning efforts and their degree of reliance on other critical sectors.

It is important to note that many of the largest organizations within the financial sector have done a tremendous amount of pandemic planning. In addition, the Federal Financial Institutions Examination Council (FFIEC) has issued guidance to their regulated entities to require pandemic appendices to business continuity plans.*

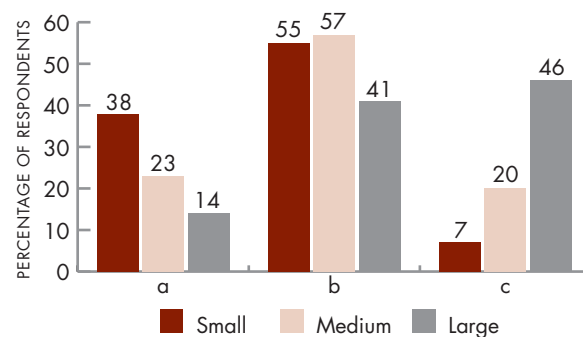
The findings of the exercise indicate that—although the majority of participants had made significant progress in preparing for a pandemic—participants were aware that a pandemic would pose complex planning issues and that additional planning is needed, chiefly by the sector’s smallest organizations. For

* Available at <http://www.ffiec.gov/press/pandemicguidance.pdf>. This guidance was not available prior to the exercise.

example, more than one-third of small organizations indicated that they had not specifically addressed pandemic planning in their business continuity plans (see Fig. 4). However, of the organizations that had specific pandemic plans, the majority of respondents indicated that those plans were moderately effective.

Based on the findings of this exercise, it appears that although there will be significant impacts on the financial services sector, the sector will continue to operate and cope with these impacts.

FIG. 4

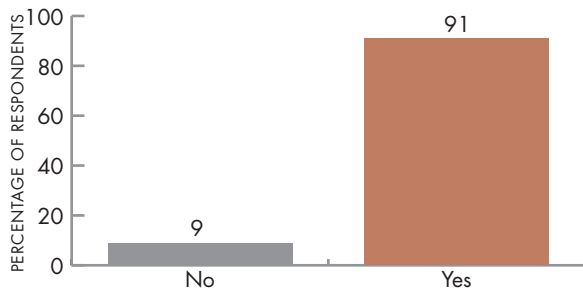


Does your organization have business continuity plans for a pandemic?

a. No; b. Yes, continuity plans developed; c. Yes, continuity plans developed and exercised

Overall, the exercise enabled participants to identify their planning needs and, based on their organizations' lessons learned during the exercise, 91 percent of respondents indicated that they would initiate additional refinements to their plans (see Fig. 5).

FIG. 5

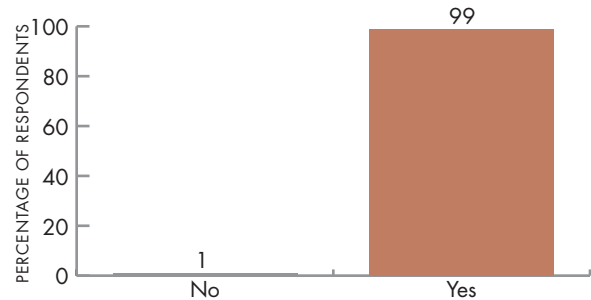


Will your organization initiate additional all-hazard plan refinement based upon your organization's lessons learned during the exercise?

Another key objective was to provide financial organizations with an opportunity to test their business continuity plans against a plausible pandemic influenza scenario. Benchmark questions asked at the beginning and at the end of the exercise helped participants gauge the effectiveness of their pandemic plans. Overall, 99 percent of respondents stated that the exercise was useful to their organizations in assessing their pandemic business plans (see Fig. 6).

Another key objective was to provide financial organizations with an opportunity to test their business continuity plans against a plausible pandemic influenza scenario.

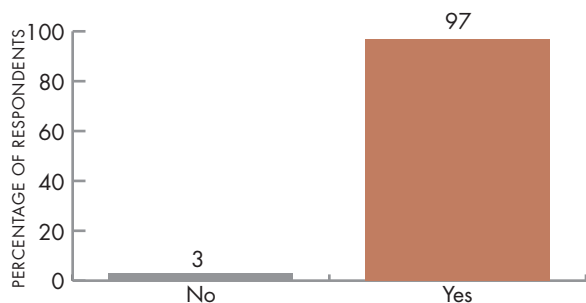
FIG. 6



Was this exercise useful to your organization in assessing your pandemic business planning needs?

Another feature of a pandemic is that it will impact all industries, including service providers upon which financial services organizations rely. Standard business continuity planning often includes additional arrangements for vendor services, such as telecommunications, fuel, or office supplies. However, these plans are often focused on limited timeframes and are not necessarily pandemic-focused. As a result, they may not take into consideration the degree to which these service providers may also be constrained. During a pandemic, service providers will likely suffer levels of absenteeism similar to those experienced by other organizations, which may reduce their level of operations and service. This is an important issue and may be highlighted in pandemic plans, which is why the exercise examined how the effects of a pandemic flu on other critical infrastructures would impact the financial services sector (see Fig. 7). Leveraging the experience and skills of public and private sector experts, the exercise scenario was designed to provide descriptions of the effects of a pandemic on other sectors to enable participants to better understand the issue of interdependency.

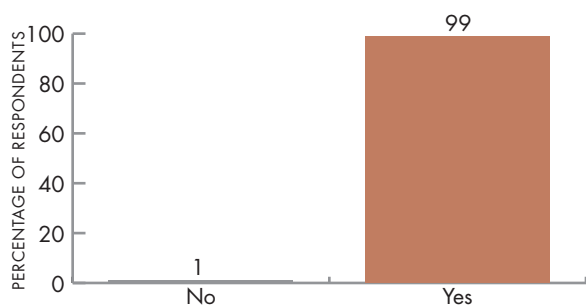
FIG. 7



Did the exercise allow your organization to identify critical dependencies, gaps, and seams that warrant additional attention?

By successfully meeting the objectives, the exercise provided participants with the opportunity to examine key crisis management issues, to foster strategic thinking, and to strengthen their overall preparedness (see Fig. 8).

FIG. 8



Did the exercise meet its stated objectives?

Key Themes

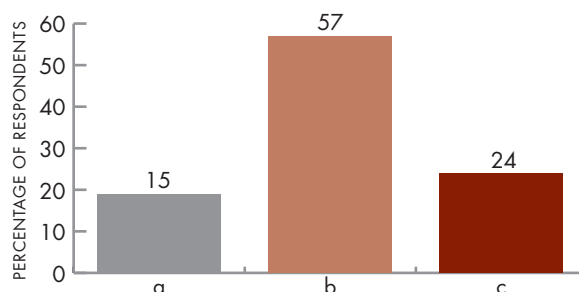
Based on participants' responses to the exercise questionnaires, there were several key themes that were important to pandemic planning: communications plans, infrastructure dependency plans, cross-trained employees, telecommuting, human resources issues, and second pandemic wave plans.

The exercise examined how the effects of a pandemic flu on other critical infrastructures would impact the financial services sector.

COMMUNICATIONS PLANS

A large majority of participants reported that they had developed pandemic communications plans. At the beginning of the exercise, more than 80 percent of respondents indicated that they had communications plans in place to provide information to their employees, customers, and suppliers during a pandemic (see Fig. 9). At the close of the exercise, the majority of participating organizations reported that these plans were judged to have been moderately effective during the exercise.

FIG. 9



Does your organization have a communications plan in place to communicate with employees during a pandemic event?

a. No; b. Yes, communications challenges well understood and plans developed; c. Yes, communications challenges well understood, plans developed and exercised

INFRASTRUCTURE DEPENDENCY PLANS

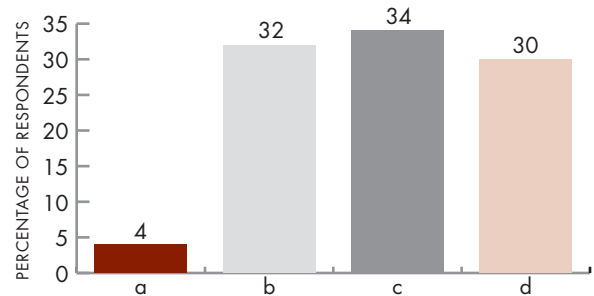
At the beginning of the exercise, the majority of participants indicated that they had developed some continuity plans regarding their dependency on external infrastructure. Financial organizations depend on external infrastructure service providers (e.g., telecommunications, data networks, and electric power providers) for business operations. For that reason, participants noted during the exercise that planning for possible disruptions and/or degradation in service was of great importance.

At the beginning of the exercise, 97 percent of respondents stated that they understood their dependencies on telecommunications, and a majority had plans to address service interruptions. At the conclusion of the exercise, the organizations generally considered their plans for telecommunications service interruptions to be minimally to moderately effective.

The majority of participants indicated that they had developed some continuity plans regarding their dependency on external infrastructure.

At the onset of the exercise, 96 percent of respondents stated that they understood their dependencies on power service (see Fig. 10). After participating in the exercise, respondents, on average, considered their plans to address power service interruptions to be moderately effective.

FIG. 10

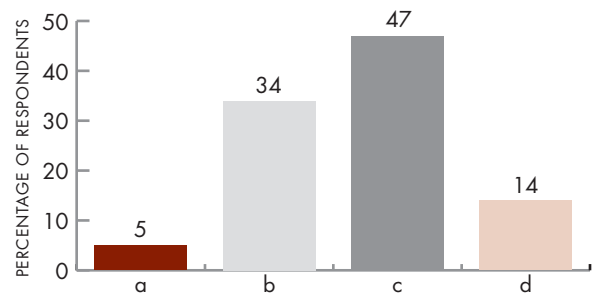


Does your organization have a detailed understanding of its external dependencies on power service providers, and has it developed plans for power interruptions and/or failures?

a. No; b. Power service dependencies well understood but plans not developed; c. Yes, power service dependencies well understood and continuity plans developed; d. Yes, power service dependencies well understood, continuity plans developed and exercised

Before the exercise, dependencies on information technology (IT) suppliers, building services suppliers, and other entities were also generally considered well understood; only 5 percent of respondents stated that they did not have an understanding of the issue (see Fig. 11). At the conclusion of the exercise, participants believed their plans to address interruptions in these services to be moderately effective.

FIG. 11



Does your organization have a detailed understanding of its other key dependencies, e.g., IT suppliers, building services suppliers, departments in your organization, and other outsourced or internal entities (call centers, help desks, etc.), and has it developed plans for interruptions and/or failures of these services?

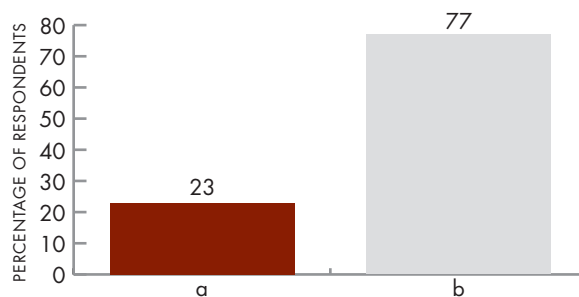
a. No; b. Dependencies well understood but plans not developed; c. Yes, dependencies well understood and continuity plans developed; d. Yes, dependencies well understood, continuity plans developed and exercised

Overall, the majority of participants indicated that they understood their external dependencies and that their plans, based on the exercise scenario, were moderately effective at addressing these dependencies.

CROSS-TRAINED EMPLOYEES

The exercise scenario was designed to directly affect the number of employees available to work by simulating absenteeism rates. For example, all schools were deemed to be closed during the height of the pandemic, generally decreasing the number of employees available to work. Approximately 72 percent of respondents stated that this would have a moderate to significant impact on their organization. The industry's long-standing practice of cross-training employees as part of ongoing business continuity programs was apparent in the participants' responses to the questionnaires. During the height of the pandemic, a substantial majority of organizations across the sector reported that they had a sufficient number of cross-trained employees to conduct essential operations (77 percent, see Fig. 12) and to meet increased online customer demand (80 percent). Large organizations were more likely than medium or small organizations to report that they did not have sufficient numbers of cross-trained employees, particularly during the height of the pandemic. Most participants relied on internally cross-trained employees, although a significant number of large organizations also relied on pre-trained subcontractors.

FIG. 12



Does your organization have a sufficient number of cross-trained employees to conduct essential operations given the absenteeism level that you are experiencing for scenario update 2?

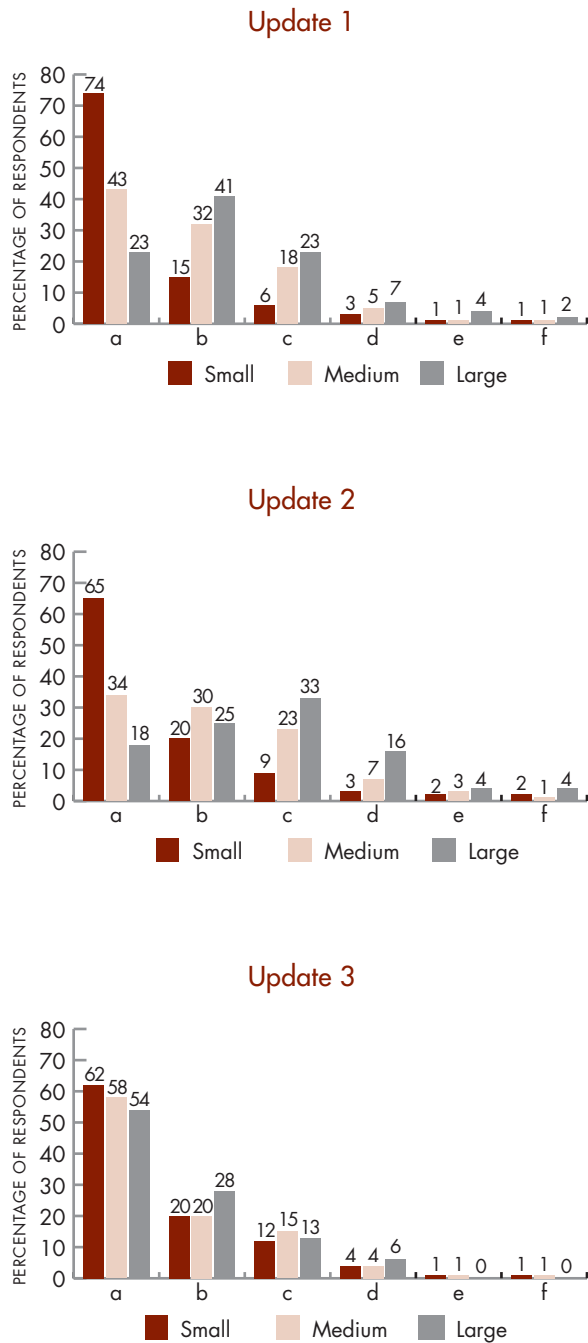
a. No; b. Yes

TELECOMMUTING

The exercise findings indicated that although many organizations included telecommuting as part of their plans for social distancing, relatively few employees telecommuted during the exercise. During the height of the pandemic, about one-third of large organizations reported that 26–50 percent of their employees telecommuted. Conversely, approximately one-third of medium organizations and a substantial majority of small organizations reported that less than 10 percent of their available employees worked from home (see Fig. 13).

During the height of the pandemic, a substantial majority of organizations across the sector reported that they had a sufficient number of cross-trained employees to conduct essential operations.

FIG. 13



Given the situation in this scenario update, approximately what percentage of your available employees (i.e., those who were not indicated to be absent through the absenteeism distribution information) are working from home?

a. 0% - 10%; b. 11 - 25%; c. 26 - 50%; d. 51 - 75%; e. 76 - 90%; f. 91% or more

Following the responses to the questionnaire for scenario update 1, the control team held a robust discussion on the issue of telecommuting. This discussion focused on the unexpected responses across the sector stating that few employees were telecommuting at this stage of the pandemic. The control team, after exploring various avenues and explanations, ultimately decided that the remaining questionnaires (i.e., those for scenario updates 2 and 3) should include a text-based response to gain a better understanding of this issue.

In text-based responses, many of the small and medium organizations explained that telecommuting was not feasible for more employees because—

- » Employees' job functions required them to be onsite*
- » Organizations did not have the necessary IT equipment
- » There were security concerns with respect to remote access

Small organizations also explained that they used social-distancing strategies such as staggered shifts, personal space limitations, and PPE instead of telecommuting.

The majority of organizations reported at the onset of the exercise that they had a good understanding of their telecommuting capabilities. In addition, the majority of medium and large organizations had already developed plans and, in some cases, had exercised those capabilities. Still, with regard to the computer systems used for telecommuting by staff who

* For example, tellers must perform their job functions at a financial institution.

perform critical functions, the medium and large organizations generally reported to have previously tested systems for less than half of their staff, and most small organizations reported to have tested these systems for less than 5 percent of their staff. At the close of the exercise, most participants considered their plans minimally to moderately effective.

HUMAN RESOURCES MANAGEMENT

The exercise looked at a variety of human resources management issues that might occur during a pandemic, such as employee education, employee counseling, distribution of anti-viral medication and PPE, and employee payment concerns.

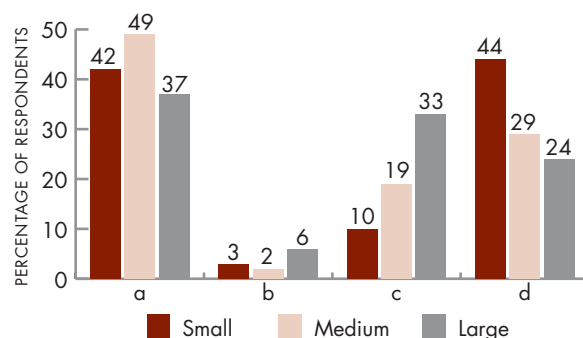
At the beginning of the exercise, 57 percent of small organizations indicated that they were not educating employees about preparedness steps for individuals and families. Conversely, more than half of the medium and large organizations stated that they were educating employees about these preparedness steps. The questionnaire also asked if organizations had established and implemented grief/trauma counseling for employees. More than half of the respondents indicated that they did not have human resources policies for providing grief/trauma counseling for returning employees.

Another human resources management issue was the distribution of anti-viral medications and PPE. During the height of the pandemic, 88 percent of participants indicated that their organizations either did not have stockpiles of anti-viral medications (e.g., Tamiflu or Relenza) or had decided not to distribute them. Organizations indicated that they would be far more

likely to stockpile PPE than anti-virals. Fifty-four percent of organizations had PPE and distributed it during the height of the pandemic (see Fig. 14). Large organizations were slightly more likely than small and medium organizations to reserve such equipment for workers who perform critical functions. The majority of organizations indicated that they were replenishing or creating new stockpiles of PPE by the time of scenario update 3.

Organizations indicated that they would be far more likely to stockpile PPE than anti-virals.

FIG. 14



Is your organization distributing Personal Protective Equipment (PPE) such as N95 respirators and surgical masks and gloves? (scenario update 2)

a. No, we have either never had a PPE supply or exhausted our supply in scenario update 1; b. No, we are not distributing our supply of PPE during scenario update 2; c. We are distributing PPE to key workers only; d. We are distributing PPE to our entire workforce

During the exercise, participants indicated that they would ask employees to use a combination of sick leave, annual leave, and disability leave for the periods the employees were unable to work. During the peak of the pandemic, the

large organizations were more likely than small and medium organizations to pay employees who were absent from work and who had exhausted their paid-leave benefits. However, the percentage of large organizations that would pay these employees decreased from 70 percent during the height of the pandemic to 42 percent as the pandemic waned.

Fifty-seven percent of respondents indicated they did not have plans in place to address a second pandemic wave.

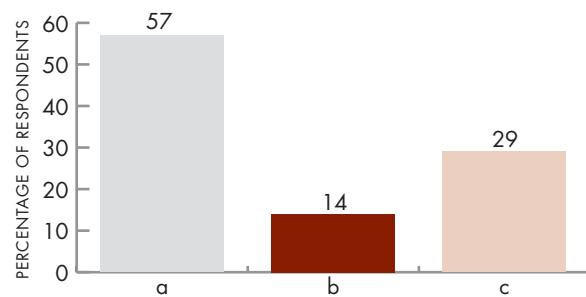
Another human resources management issue focused on whether organizations offered incentive packages to encourage employees to return to work. Twenty percent of participants indicated that they would offer financial incentives to encourage employees to come to work when absenteeism was at its highest level, during scenario update 2.

Overall, organizations reported that their existing human resources policies were moderately effective in meeting workforce needs during a pandemic. This response was consistent among small, medium, and large organizations.

SECOND PANDEMIC WAVE PLANS

Historical data indicate that a second (and perhaps, third) pandemic wave is likely. This exercise did not progress past the first pandemic wave; however, the questionnaire asked respondents whether their existing plans address a second pandemic wave. Fifty-seven percent of respondents indicated they did not have plans in place to address a second pandemic wave (see Fig. 15).

FIG. 15



Do your organization's existing pandemic continuity plans address a second pandemic wave following closely on the heels of the first?
a. No; b. Yes; c. Planning in progress, not yet implemented

By Industry

In addition to highlighting several key planning issues that affected the majority of participants, the exercise focused on specific concerns for various subsectors within the financial services sector. Based on the categories described in the registration form, the subsectors were defined as banking, markets (securities and derivatives), and insurance.

Banking

Depository institutions of all types (e.g., banks, thrifts, and credit unions) are the primary providers of wholesale and retail payments services (e.g., wire transfers, checking accounts, and credit and debit cards) for individual consumers and for corporate entities. These institutions are often the primary points of contact within the sector for many individual customers. In this exercise, banking participants were confronted with situations that were designed to directly affect their organizations. For example, the exercise offered information on customers' social-distancing behaviors, online banking trends, call center demands, and

the functionality of automated teller machines (ATM). The majority of issues facing the banking subsector in this exercise focused on exploring the dependencies of the subsector on other critical infrastructures and on enhancing the understanding of systemic risks facing the subsector. The private sector banking participants also provided text-based responses about the types of possible regulatory relief that they might seek as they attempted to provide critical services during a pandemic.

KEY THEMES

Key themes raised during the exercise relative to banking operations included ATM operations, branch operations, providing relief to customers, and mutual aid arrangements.

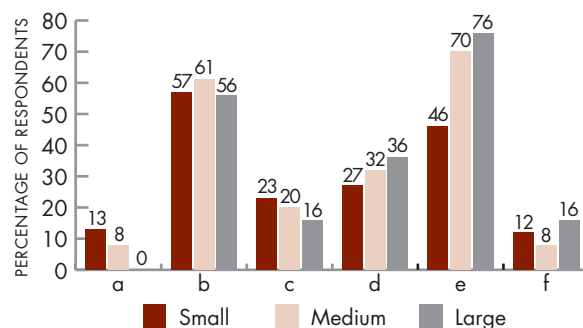
ATM Operations

During the exercise, banking participants looked at the factors associated with maintaining the operations of their organizations' ATMs during a pandemic. This issue focused on examining how the effect of the pandemic influenza on other infrastructures impacts the financial services sector. ATM networks are complex, and ATM operators manage the components in various ways. Nonetheless, most ATM networks rely on vendors to replenish cash, to remediate problems with the ATM's built-in processor, and/or to maintain the ATM connectivity network. This management model has produced a consistent and reliable service-delivery mechanism and most "outages" are completely transparent to consumers. In this exercise, banking participants' responses confirmed the subsector's recognized reliance on vendors for replenishment and maintenance of ATMs (see Fig. 16*).

* Percentages may total to greater than 100 percent for questions in which participants were asked to "check all that apply," as each participant may have selected multiple responses.

In this exercise, banking participants' responses confirmed the subsector's recognized reliance on vendors for replenishment and maintenance of ATMs.

FIG. 16



Given that 60% of your bank/credit union's ATM's are operational in scenario update 2, which of the below strategies, if any, is your organization employing to keep those machines stocked and operating? Check all that apply.

- a. No action; b. Lower the maximum amount that can be withdrawn;
- c. Increase user fees to discourage non-customer use of your ATMs;
- d. Change the denominations of the bills with which the machines are stocked; e. Work with vendors in an effort to improve servicing of machines; f. Not applicable

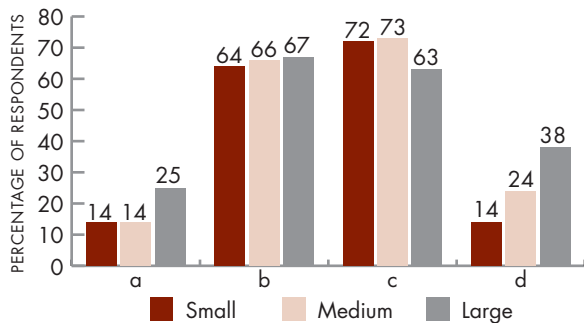
Branch Operations

Participants also focused on the possible impacts on the operations of their organizations' branch facilities. During a pandemic, high absenteeism rates and the changes in work assignments that result from facility closings will pose challenges to banks' abilities to meet their customers' needs. Participants' responses indicated an understanding of the need to adjust their facilities' availability and operational procedures to continue services in an environment of high absenteeism.

During the height of the pandemic, respondents noted that they would reduce operating hours and/or provide only drive-through services at their open branches.

The banking participants also had to address how to handle face-to-face encounters with customers during this exercise. For example, during the height of the pandemic, respondents noted that they would reduce operating hours and/or provide only drive-through services at their open branches (see Fig. 17). The majority of large and medium organizations also responded that 26–50 percent of their branches were closed on any given day during the height of the pandemic (see Fig. 18).

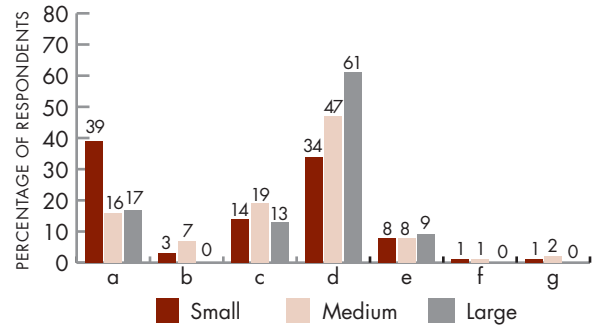
FIG. 17



Given the scenario update 2 situation, which of the following changes to operations is your organization using for bank/credit union branches that are open? Check all that apply.

a. No changes to service; b. Shortened operating hours; c. Drive-through services only; d. Other

FIG. 18



Approximately what percentage of your organization’s branches are closed on any given day given the current situation? (scenario update 2)

a. 0 – 5%; b. 6 - 10%; c. 11 - 25%; d. 26 - 50%; e. 51 - 75%; f. 76 - 90%; g. 91-100%

Providing Relief to Customers

Banking participants were asked about the types of relief they would provide to customers during the pandemic. In scenario updates 2 and 3, a substantial percentage of participants of all sizes stated that they would provide relief on one or more categories of consumer debt or mortgage loans. For a significant percentage of respondents, the increase in customer late payments was expected to have a material impact on funding liquidity, which the banking organizations intended to address by using lines of credit. A fair percentage of respondents had no plans to address these funding liquidity needs.

Mutual Aid Arrangements

At the peak of the pandemic, banking participants were asked if they have mutual aid arrangements in place that they could use if they were unable to provide services to customers. The majority of banking organizations did not have such arrangements.

REGULATORY RELIEF SOUGHT BY PRIVATE SECTOR PARTICIPANTS

Nothing contained herein should be interpreted as addressing the authority and/or likelihood of the appropriate regulatory agencies granting waivers or providing other forms of regulatory relief.

The exercise provided helpful input into the types of regulatory relief that banking participants might seek at various stages of the pandemic. The types of relief mentioned by private sector participants fall into the following broad categories:

- » Extension or waiver of regulatory reporting requirements, Bank Secrecy Act/anti-money laundering, and USA PATRIOT Act requirements
- » Postponement of examinations and audits
- » Extensions of time to comply with consumer-related regulations
- » Relaxation of branch closure/relocation notice requirements
- » Easing of reserve and liquidity requirements and relief from prompt corrective action and capital rules
- » Relief from Sarbanes-Oxley (SOX) internal controls requirements
- » Relaxation of internal policies and procedures

Participants were concerned that employee absenteeism, particularly at the height of the pandemic, could make it difficult for institutions to timely file required regulatory reports. Extensions of time or waivers were requested, particularly for call report filings, currency transaction reports, and suspicious activity reports. Extensions of time to complete reviews of high-risk

accounts and requirements for verifications and documentation to comply with Office of Foreign Assets Control requirements were also sought.

A number of organizations responded that they would request relief from bank examinations and audits, particularly those that are routine, and extension of examination frequency guidelines. A number of organizations indicated that they assumed that the regulatory agencies would postpone all but essential examinations voluntarily, given the need to implement social-distancing responses to the pandemic.

Participants were concerned that employee absenteeism, particularly at the height of the pandemic, could make it difficult for institutions to timely file required regulatory reports.

Participants also raised concerns about timely compliance with consumer regulations, including adherence to time limits on check holds and funds availability and flexibility regarding the Regulation CC definition of a “banking day.” A number of private sector participants also indicated that they would request permission to grant global loan extensions to customers and to permit premature IRA distributions.

Of fairly widespread concern was the notification for branch closures and relocations. At the height of the pandemic, more than 40 percent of bank and credit union participants indicated that between 25 and 50 percent of their branches would be closed, and more than 60 percent would either shorten operating hours

or would maintain only drive-through services. A significant number of participants indicated that they would request waivers of any closing and relocation notice requirements, given the need to adapt quickly to changing conditions. Although there are no formal requirements for notifying Federal regulators about temporary branch closings or changes in operating hours, prior communication by regulated institutions with their banking regulators is encouraged. This indicates that there is a need for clarification on this matter between banking regulators and their regulated institutions. Some large institutions anticipated requesting permission to move operations overseas or into remote locations that are not owned by the banking organization; again, open communication with regulators as these plans evolve would be beneficial.

During the height of the pandemic, 40 percent of bank and credit union participants noted that the increase in customer late payments and delinquencies had a material effect on their organizations' liquidity.

During the height of the pandemic, 40 percent of bank and credit union participants noted that the increase in customer late payments and delinquencies had a material effect on their organizations' liquidity. Although the vast majority of institutions believed that they could address the issue using existing lines of credit, some institutions indicated they would request

relief from the capital rules, reserve requirements, and prompt corrective action triggers as a result of the general market slowdown. Institutions also noted a need to extend Fedwire, CHIPS*, and SWIFT† processing times. However, these concerns were not as widespread as concerns about regulatory reporting, examinations and audits, compliance with consumer regulations, and branch closure notifications.

Some institutions expressed concern about whether staff would be available to perform all of the tasks required under SOX, especially tasks that require senior-level signoff and verification, and indicated that they would likely request waivers, or at least extensions, of those requirements.

In addition to SOX requirements, some private sector participants would also ask for leniency in complying with their own internal policies and procedures in light of anticipated management absences. Specifically, in response to concerns about tighter liquidity, exceptions to Asset-Liability Committee (ALCO) policies and liquidity target ratios were noted as areas for regulator forbearance.

The text-based responses by the banking participants on likely requests for regulatory forbearance generally is not surprising given the experience during the hurricane season of 2005. However, some of the requests do point to a need for further dialogue between the regulators and the private sector as to how best to balance legitimate needs for regulatory relief with the banking supervisors' legitimate needs for current information about the financial

* Clearing House Interbank Payment System (CHIPS)

† Society for Worldwide Interbank Financial Telecommunications (SWIFT)

condition and operations of regulated institutions, to ensure operational safety and soundness, and compliance with laws and regulations. Regulated institutions, through their trade associations, could formulate possible alternative mechanisms that would provide appropriate assurances to supervisors while allowing for flexibility to regulated institutions.

Markets (Securities and Derivatives)

Market participants were asked how they would continue to perform essential operations such as trading (either fully electronic or “open outcry” and other forms of floor trading) and clearance and settlement during a pandemic. The questions also focused on the possible operational effects of disruptions to market data because organizations rely on market data for information on equities, fixed income, foreign exchange, derivatives, and commodities. In text-based responses, the private sector market participants also discussed the types of possible regulatory relief that they might seek as they attempted to provide critical services under adverse conditions.

KEY THEMES—GENERAL MARKETS

Key themes raised during the exercise regarding general markets included trading and trading hours, clearance and settlement, and observations from exercise survey text responses.

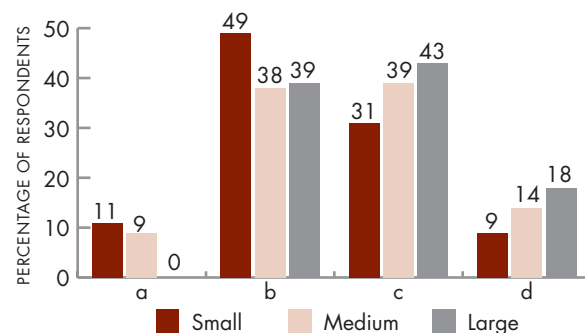
Trading and Trading Hours

During the height of the pandemic, the majority of market respondents did not believe that absenteeism rates would cause significant problems in their trading or associated risk management operations or require suspension of trading in certain products. The exception was large

organizations, where 52 percent indicated that there would be significant problems. However, most did not believe it would cause them to suspend trading in any products.

On the issue of a reduction or shift in hours, there was significant support for the proposition that any such reduction or shift be coordinated among global markets. During the height of the pandemic and after the pandemic peak, 39 percent of medium organizations and 43 percent of large organizations were open to a reduction in hours for open outcry/floor trading if such a reduction were also implemented by other major world markets (see Fig. 19).

FIG. 19



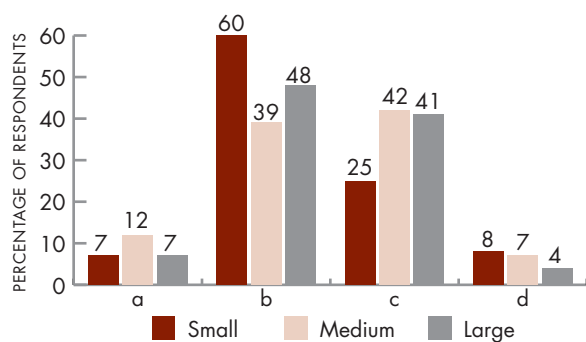
What is your organization’s view concerning a reduction in hours of open outcry trading in securities and futures given the current situation? (scenario update 2)

a. Undesirable; b. Neutral; c. Desirable only if also implemented by other major world markets; d. Desirable

On the issue of a reduction or shift in hours, there was significant support for the proposition that any such reduction or shift be coordinated among global markets.

At the peak of the pandemic, slightly less than half of the medium and large organizations supported shifting the hours of open outcry/floor trading if other major world markets did so as well (see Fig. 20). The majority of small and medium organizations stated that there would be little or no effect on their organizations with a half-day or less of open outcry/floor trading during the height of the pandemic; 43 percent of large organizations agreed, although 50 percent of large organizations believed this reduction would create moderate problems. If open outcry/floor trading were suspended during a pandemic, a majority of small and medium organizations and 46 percent of large organizations claimed that migrating all trading to fully electronic trading would have little effect on their trading operations; slightly more than half of large participants foresaw a moderate effect.

FIG. 20



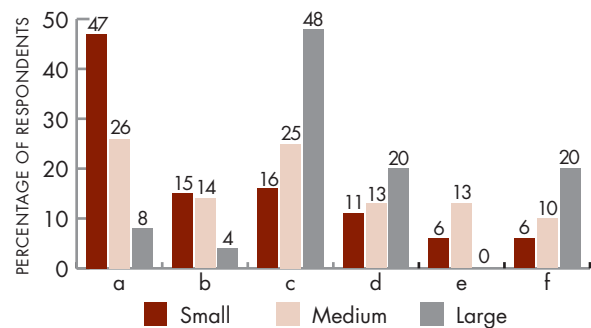
What is your organization's view concerning a shifting of hours of open outcry trading in securities and futures given the current situation? (scenario update 2)

a. Undesirable; b. Neutral; c. Desirable only if also implemented by other major world markets; d. Desirable

Clearance and Settlement

At the height of the pandemic, 88 percent of large firms indicated they would be delayed by at least 2 hours, and approximately 25 percent of those believed that the delay would be more than 4 hours. After the peak of the pandemic, more than half (58 percent) of the large organizations still believed they would be delayed by at least 2 hours, and 50 percent of those believed that the delay would be at least 4 hours (see Fig. 21).

FIG. 21



In what timeframe is your organization able to complete clearance and settlement, given the current level of absenteeism and trading volumes? (scenario update 2)

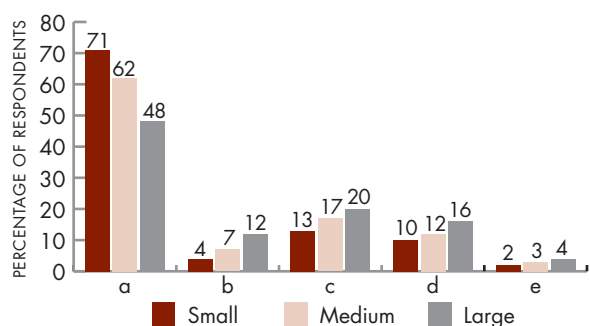
a. Normal timeframe; b. 1 hour delay; c. 2 hour delay; d. 3 hour delay; e. 4 hour delay; f. More than 4 hour delay

Nevertheless, a significant number of organizations (71 percent of small firms, 62 percent of medium firms, and 48 percent of large firms) responding during the height of the pandemic did not believe they would need a shortened trading day to meet cutoff times for clearance and settlement. Among large firms, however, another 48 percent believed that it would be necessary to shorten the trading day by one hour or more* (see Fig. 22). When the pandemic began to wane in scenario update

* An additional 4 percent of large firms apparently would have difficulties completing these functions even if trading hours were shortened.

3, more than 70 percent of the firms that responded did not believe it would be necessary to shorten the trading day.

FIG. 22



Does your organization require a shortened trading day in order to meet your cutoff times for clearance and settlement?
 a. No; b. 1 hour earlier; c. 2 hours earlier; d. 3 or more hours earlier; e. Unable to meet cutoff

Observations from Exercise Survey Text Responses

Some respondents indicated that they would anticipate a decline in new investments coupled with increased liquidations to support clients' needs for cash. Organizations also noted that they would limit trading activities to those that would reduce their level of risk. Trading in nearly every product in the general markets subsector was affected by the high level of absenteeism at one or more organizations during the exercise.

The issue of delays in market data elicited a variety of text responses from organizations regardless of size. Many organizations stated that they would limit or suspend trading until market data issues were resolved; some noted that they would use theoretical data or estimated matrix pricing; and others remarked that they would rely on voice quotes from counterparties and on direct contact with market participants

to obtain a second independent confirmation of price quotes. Market data issues generally were assumed to result in much lower volumes and in increased client communications designed to explain the situation.

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REGULATORY RELIEF SOUGHT BY PRIVATE SECTOR PARTICIPANTS

Nothing contained herein should be interpreted as addressing the authority and/or likelihood of the appropriate regulatory agencies and self-regulatory organizations granting waivers or providing other forms of regulatory relief.

The exercise provided useful insights into the types of regulatory relief that securities and futures firms believe would enhance their ability to maintain critical operations despite the high absenteeism rates that could be expected during a pandemic.[†] These insights should promote ongoing discussions among the securities and futures industries, and regulators and self-regulatory organizations (SROs) about the types of temporary regulatory relief that might be appropriate in response to a pandemic as well as

[†] Responses from a number of the large firms also cited the issues identified in the September 15, 2006, letter submitted by the Bond Market Association and the Securities Industry Association (now SIFMA) in response to a solicitation for comments issued by the National Association of Stock Dealers (NASD) Regulation, Inc., concerning regulatory relief that might be necessary during a pandemic to enable securities firms to continue doing business. A copy of this letter is available at www.sifma.org.

the types of regulatory relief that would raise concerns about the integrity of the markets and the protection of investors.

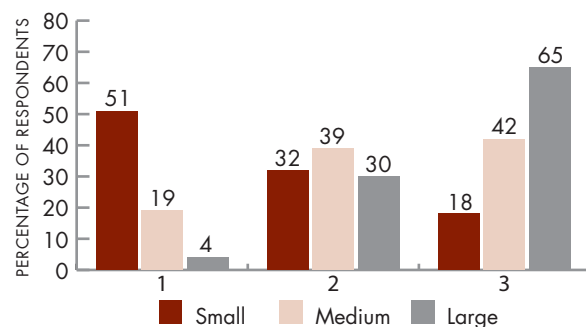
One common suggestion from private sector participants was that most routine audits or examinations should be deferred during a pandemic.

For example, one common suggestion from private sector participants was that most routine audits or examinations should be deferred during a pandemic. Similarly, many private sector participants indicated that “continuing education” requirements for market professionals might need to be relaxed until a pandemic wanes. In addition, private sector participants indicated that they might need additional time to submit regulatory reports that are not particularly time-sensitive (see Fig. 23). Although any temporary relief would depend on the facts and specific circumstances, further dialogue on these types of issues among securities and futures firms, regulatory agencies, and self-regulatory organizations might prove useful.

On the other hand, regulatory agencies and SROs organizations expressed reservations about some of the suggestions from participating firms. For example, suggestions from some private sector participants to extend deadlines for some types of trade reporting raised significant concerns over the potential adverse impact on price transparency and surveillance programs

for abusive or illegal trading practices.* In addition, suggestions to extend reporting deadlines on firms’ financial status† might have the unintended consequence of impairing the ability of regulators and SROs to address problems at particular firms in a timely manner. Suggestions to extend deadlines for firms to calculate the value of their positions and their capital could, depending on the duration of the extension, impair the ability of both the firms and their regulators to adequately gauge the firms’ risk exposure during the difficult market conditions that are likely to be encountered in a severe pandemic.

FIG. 23



How much assistance will the listed activity provide your organization in performing operations given the current level of absenteeism? Please assign a number, with 1 representing “little to no assistance,” 2 representing “medium level of assistance,” and 3 representing “high level of assistance.” (scenario update 2)

Extend reporting windows (e.g., trade reporting, reconciliations, QT’s, 15C-3, NAV calculation)

* Trade reports include submissions of information on equity transactions to the Order Audit Trail System (OATS) and on over-the-counter secondary market transactions in eligible fixed-income securities to the Trade Reporting and Compliance Engine (TRACE). These reports are required by rules of the Financial Industry Regulatory Authority (FINRA). Futures commission merchants are required to provide Large Trader Reports to exchanges and to the Commodity Futures Trading Commission (CFTC) on a daily basis.

† Securities firms are required to provide such information on the Financial and Operational Combined Uniform Single Report (FOCUS) reports filed with FINRA; futures firms file reports either on Form 1-FR or (for those that are also securities firms) on the FOCUS form.

Responses indicate that, despite regulatory concerns, firms believe strongly that high absenteeism rates will significantly curtail their ability to compile and file many of these reports in standard timeframes. This is especially true among medium and large firms, which account for the largest market share.

Both the industry and regulators recognize that obtaining precise figures for many of these types of reports may be a manually intensive process and that it might be extremely difficult for many firms to submit within normal timeframes if a severe pandemic depleted critical staff. Accordingly, the highlighting of these issues in the exercise should serve as a catalyst for more discussions among securities and futures firms, regulatory agencies, and SROs to develop a better common understanding of how these and related matters might be addressed during a pandemic without compromising key safeguards for investors, other market participants, and the financial system.[‡]

Some of the most complex regulatory issues raised by the exercise pertain to plans at many firms to disperse staff to locations outside of their normal workplace. When asked during the height of the pandemic what steps they would take to meet business and regulatory obligations, nearly 100 percent of the large firms, 93 percent of the medium firms, and 85 percent of small firms indicated that they would establish work-at-home capabilities. In addition, 83 percent of large firms, 75 percent of medium

[‡]When scenario update 2 posited some delays in market data feeds, several large firms also indicated that regulators might need to relax various quotation and order-routing rules for stocks. Such proposals would need to be carefully scrutinized to avoid inadvertently exacerbating problems in price transparency and liquidity in the already difficult markets that are likely to be encountered during a severe pandemic.

firms, and 66 percent of small firms indicated that they would also disperse staff to different sites. Accordingly, a common theme among participants was that regulators and self-regulators might need to provide firms with more flexibility in areas such as supervisory and record-keeping requirements (as well as requirements to register these sites as new branch offices) to enable firms to implement such remote operations.[§]

Both regulators and the regulated organizations recognize that among the key action items resulting from the exercise is the need for collaborative efforts to analyze the issues arising from remote operations during a pandemic. Firms will need to clarify their plans for remote operations, identify the regulatory provisions that would potentially impact operations in accordance with those plans, and develop the rationales for requests for regulatory flexibility for such arrangements, including the means by which important regulatory goals would be protected. For example, the regulatory concerns that might arise if a firm's executive, administrative, or support personnel operate temporarily from home would likely be vastly different from the issues that would need to be addressed if trading or sales personnel sought to operate temporarily outside of their normal work environment. In particular, if regulatory relief requests are contemplated for traders and sales

[§]Some securities and futures firms (up to 28 percent of large firms) indicated that they would shift work to other locations within the United States where the organization is not currently licensed. Such arrangements often involve having traders or sales personnel operate from their homes or from other locations in States in which the firm is not registered to operate branch offices. Implementing such arrangements would require clearances from State regulators and SROs that these locations would not be deemed unregistered branch offices. In addition, the regulatory relief issues pertaining to supervision and recordkeeping for remote operations, discussed above, would also apply to such arrangements.

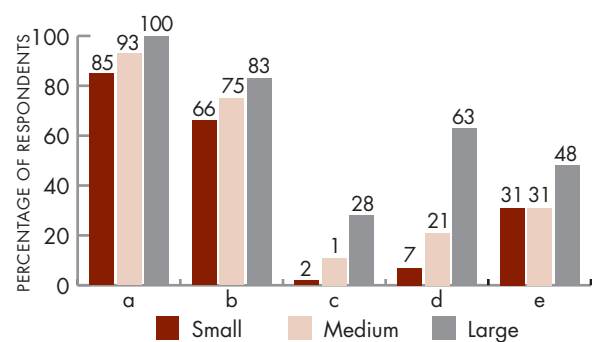
personnel to temporarily work from home, then discussions would need to be held in the context of concrete plans that the firms have developed to link these operations to the essential supervisory and recordkeeping programs that must be maintained by firms to meet their regulatory obligations and to address potential financial and legal liabilities under these arrangements.* More information would be needed about how controls would be maintained for dispersed operations if significant disruptions were encountered in the telecommunications networks and in other dependencies (e.g., electrical power) that are necessary for work-at-home arrangements. Such follow-up discussions among the regulatory agencies, SROs, and the securities and futures industry would be a useful outgrowth of the exercise and should promote better understanding about the types of regulatory relief that might be granted without compromising critical safeguards for investors and the markets.

Both regulators and the regulated organizations recognize that among the key action items resulting from the exercise is the need for collaborative efforts to analyze the issues arising from remote operations during a pandemic.

* Firms also would need to address the substantial IT and telecommunications challenges—as well as the significant costs involved—if they contemplate setting up traders at their homes with all of the market-data, trading, and communications systems that they normally use in their workplaces.

Finally, the exercise highlighted the need to consider temporary regulatory relief issues for business continuity on an international scale. Approximately 63 percent of the large securities and futures firms indicated that their plans for a pandemic include switching some functions to locations outside of the United States, as did 21 percent of medium firms and even 7 percent of small firms (see Fig. 24).

FIG. 24



What steps is your organization taking to ensure that it is meeting business and regulatory obligations during this phase of the pandemic? Check all that apply. (scenario update 2)

a. Establish work at home capabilities; b. Divide various business units into multiple groups and disperse the groups to different work sites; c. Shift work within the United States to a location where your organization is not currently licensed; d. Switch some functions to locations outside of the United States; e. Enter into service-level agreements with other organizations

Again, the extent to which regulatory relief would be necessary under these arrangements depends on the types of functions that would be affected. In particular, if a firm not only were to contemplate temporarily shifting executive, administrative, and support functions to other locations but also planned to conduct trading and sales operations with U.S. customers from

offshore locations with personnel who are not registered in the United States for such activities, then a variety of regulatory issues would need to be addressed with U.S. and foreign regulators.† Although regulatory frameworks for extensive cross-border trading are already well established in worldwide 24-hour markets, such as foreign exchange and some debt and derivatives markets, and international trading is rapidly expanding in a variety of other markets, sudden ad hoc shifts in activities in other markets (e.g., U.S. equities) would require further work to address regulatory agencies' concerns.

KEY THEMES—U.S. TREASURY SECURITIES

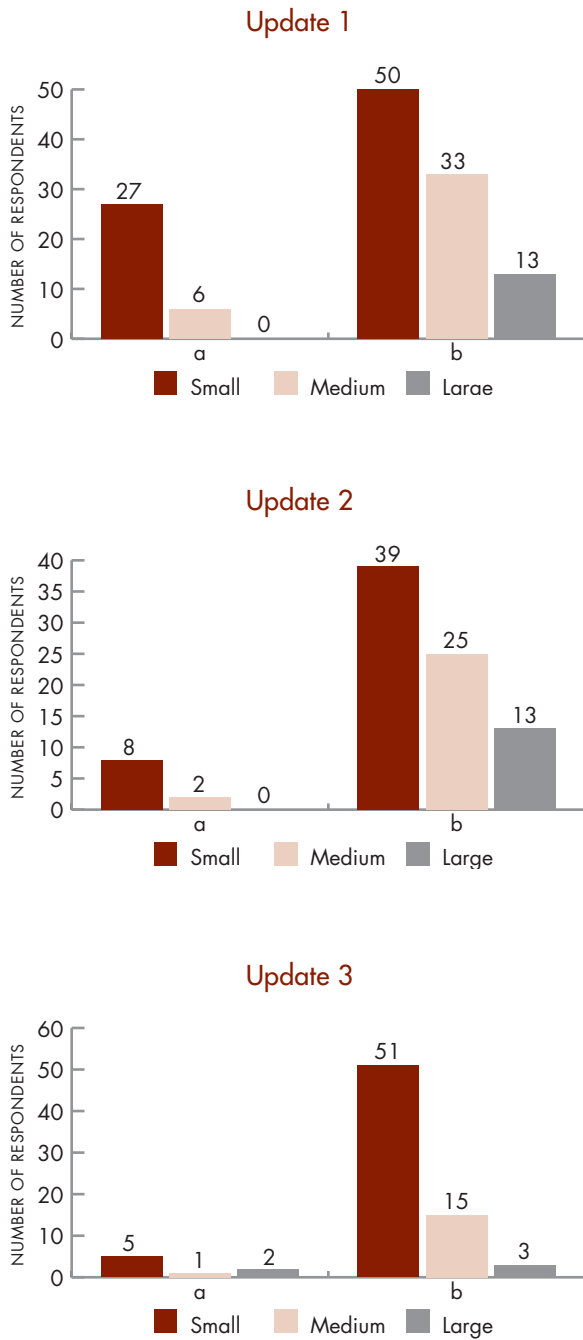
The findings in this section represent the analysis of responses received from more than 200 Treasury bond auction participants. The scope and focus of the questions were designed to enhance understanding about whether or not auction participants would be able to participate in regularly scheduled and unscheduled auctions during a pandemic. In particular, the analysis focused on the responses of medium and large organizations because they are the entities whose primary dealer offices have the greatest effect on the bidding in Treasury auctions.

† International financial authorities and firms would also need to discuss whether objective standards maintained by public health authorities (such as the announcement of pandemic "phases" or "stages" by domestic or international health authorities) should be used as triggering events that might warrant regulatory relief to support temporary shifts of some functions to foreign affiliates, or whether standards should be based on specific effects on the financial sector, or other, more judgment-based standards.

Ability to Participate in Bond Auctions

The primary dealers' ability to participate in Treasury auctions during a pandemic depends on (1) the availability of the human resources to formulate and submit bids and (2) the capacity (technology infrastructure) to transmit those bids electronically or by telephone to the Treasury Department. Responses indicated that all primary dealer participants had developed and implemented business continuity plans that address participation in Treasury auctions during a pandemic. Responses to the questionnaires showed that primary dealers likely would have the resources they need to participate in regularly scheduled Treasury auctions. Unfortunately, the number of respondents to the questionnaire in scenario update 1 decreased significantly in scenario updates 2 and 3. Those who did respond in scenario updates 2 and 3 indicated that they would be able to participate in Treasury auctions throughout the exercise (see Fig. 25).

FIG. 25



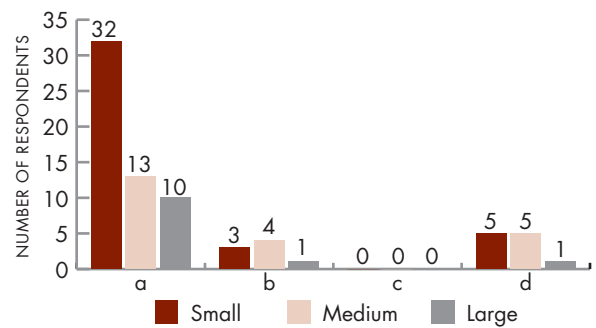
Is your organization able to participate in the U.S. Treasury's scheduled bond auction(s) (see auction information in the scenario)?

a. No; b. Yes

Bond Auction Participation Location

All primary dealers have alternative sites that have the technological infrastructures needed to enable electronic bid submissions. Responses to the questionnaires indicated that the majority of primary dealers participated from their primary business sites during the exercise, including during the height of the pandemic. For medium and large organizations that did not use their primary site to enter auction bids, responses were split between participation from alternative backup sites and from home locations (see Fig. 26).

FIG. 26



From what location is your organization participating in the auction(s)? (scenario update 2)

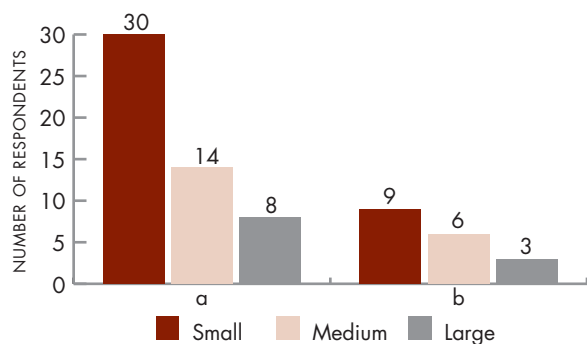
a. Primary Site; b. Backup Site; c. Overseas Location; d. Home Location

Submitting Bids On Time

The exercise also focused on Treasury auction participants' capability to submit bids on time in regularly scheduled auctions during a pandemic. Although the number of respondents to the questionnaire decreased from scenario update 1 through scenario update 3, those that did respond indicated that there would be continued

support for Treasury auctions. Interestingly, some medium and large organizations responded that there would be no impact to submitting their bids on time (31 in scenario update 1, 22 in scenario update 2, and 13 in scenario update 3). Conversely, others in the same group indicated that there would be an impact (5 in scenario update 1, 11 in scenario update 2, and 2 in scenario update 3). These findings indicate that most, if not all, of Treasury's primary dealers were able to participate in regularly scheduled auctions and to submit their bids on time during all three scenario updates (see Fig. 27).

FIG. 27



Has your organization's ability to submit bids on time for all scheduled auctions (see auction information in the scenario) been impacted as a result of the situation in scenario update 2?

a. No; b. Yes

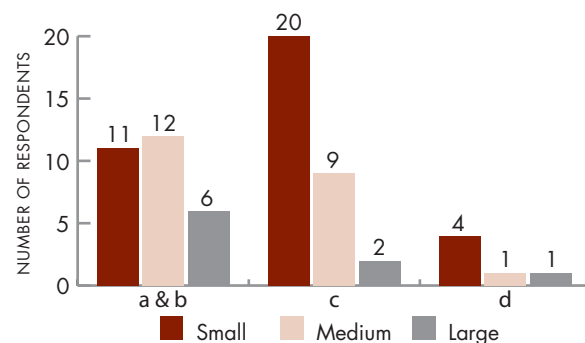
Method of Bid Submission

The exercise also included questions to determine if the method of bid submission (i.e., electronic or telephone) would be negatively affected. To understand how a pandemic might affect the method of auction bid submission

it is important to know how primary dealers submitted bids during the exercise. The findings indicate that primary dealers would be able to submit their bids given the scenario update 1, 2, and 3 absenteeism rates of 25 percent, 49 percent, and 35 percent, respectively. Based on the data, there was ample bid support for Treasury auctions during the exercise. During the height of the pandemic, approximately one-third of medium and large organizations reported that they would submit their bids by telephone (see Fig. 28).

Most, if not all, of Treasury's primary dealers were able to participate in regularly scheduled auctions and to submit their bids on time during all three scenario updates.

FIG. 28



How has your organization been able to submit your bids given the situation in scenario update 2?

a. TAAPS link 1; b. TAAPS link 2; c. Via telephone; d. Other

During the height of the pandemic, approximately one-third of medium and large organizations reported that they would submit their bids by telephone.

Overall, the data support the view that most organizations believe they will have the resources available to submit their bids electronically via the Treasury Automated Auction Processing System (TAAPS) link 1 or TAAPS link 2.* However, some respondents would opt for telephone submissions under certain pandemic conditions.

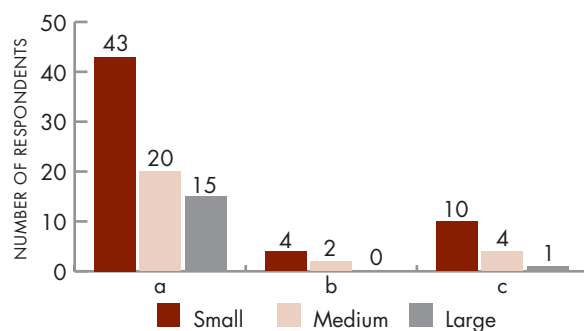
Out-of-Region Site Bid Submission

During the exercise, primary dealer participants were asked about whether they would need to use an out-of-region site (i.e., a location that is outside of the region where they normally participate in auctions) to formulate, submit, and transmit bids, either electronically or by telephone.

The questionnaire responses indicated that the vast majority of primary dealers would not rely on out-of-region sites to submit Treasury auction bids during a pandemic, and only a small segment of organizations noted that they had the ability to submit bids from an out-of-region site. Moreover, about two-thirds of the medium and large respondents submitting bids from an out-of-region site concluded that they were fully

prepared. However, it appears that the primary site is the location of choice when submitting bids during a pandemic (see Fig. 29).

FIG. 29



Is your organization relying on an out-of-region site to submit your firms bids in Treasury’s scheduled and unscheduled auctions, and do you feel that your organization was fully prepared to do so (e.g., determined how it will work, who will submit, who will determine bid size(s), yield(s), and discount rate(s) to bid, as well as your net long positions)? (scenario update 2)

a. No, we are not relying on an out-of-region site; b. We are relying on an out-of-region site but were not fully prepared to do so; c. Yes, we are relying on an out-of-region site and we feel that we prepared fully to do so

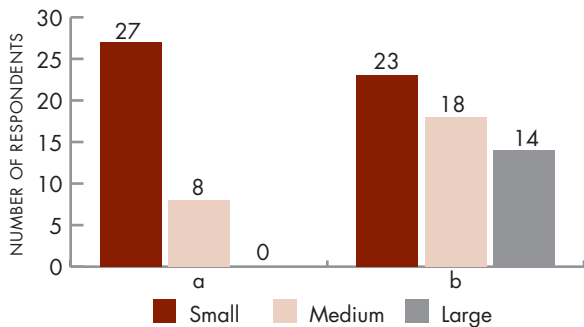
Unscheduled Cash Management Bills

The exercise also looked at the ability of primary dealers to participate in unscheduled cash management bill (CMB) auctions if there is a pressing need for cash during a pandemic.

Overall, findings indicated that most medium and large organizations would be able to participate in unscheduled Treasury auctions given the exercise scenario. During scenario updates 1, 2, and 3, of the medium and large respondents, 60 percent, 80 percent, and 81 percent, respectively, reported that they would be able to participate in unscheduled CMBs (see Fig. 30). These results show that unscheduled CMBs could be successful during a pandemic.

* TAAPS links are vehicles that dealers and banks use to submit bids. This computer network system receives bids, separates competitive and non-competitive bids, ranks competitive bids by increasing yield or discount rate, and prepares a summary of auction results.

FIG. 30

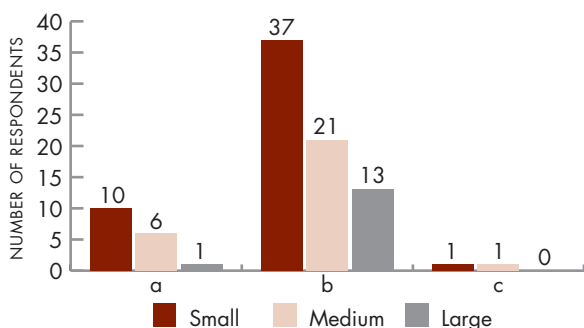


If Treasury has a pressing cash need to conduct several unscheduled CMB's at the time of this scenario update, is your organization prepared to participate in these unscheduled CMB's? (scenario update 2)
 a. No; b. Yes

Substitute Authority to Formulate and Submit Bids

The participants also focused on their ability to have trained personnel available to back up key trading or trade-submission positions during a pandemic. Overall, most medium and large organizations stated that they have sufficient depth at the trader level to handle scheduled and unscheduled bill auctions (see Fig. 31). These findings indicate that the majority of medium and large organizations have other employees available with the expertise and authority necessary to formulate and submit bids for an unscheduled CMB.

FIG. 31

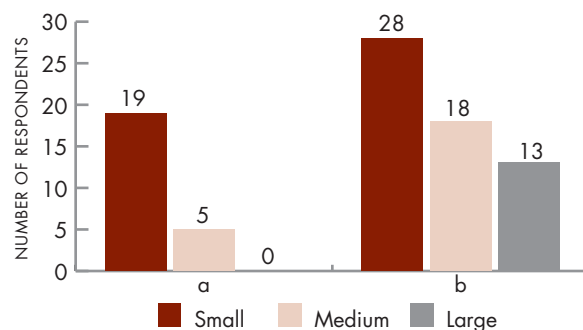


If the regular bill trader(s) is/are unavailable because of illness, is there another employee in your organization who will have the authority to formulate and submit bids and net long positions for unscheduled CMB's? (scenario update 2)
 a. No; b. Yes; c. Under consideration

Net Long Position

In this exercise, the medium and large Treasury auction participants evaluated their ability to calculate and report net long positions.[†] During the height of the pandemic, most medium and large respondents noted that they would be able to calculate and accurately report their net long positions for each auction in all three scenario updates (see Fig. 32).

FIG. 32



Was your organization able to calculate and report your net long position for each auction as a result of the situation in scenario update 2?
 a. No; b. Yes

Insurance

The exercise explored how different members of the insurance industry—health, property/casualty, and life insurers—would be affected by a pandemic. The questionnaire responses indicate that the exercise helped participants to benchmark their pandemic planning against others' plans, to identify their dependencies on and impacts from service providers outside of their sub-sectors.

[†]A net long position (NLP) is one in which an investor has more long positions than short positions in an asset, market, portfolio, or trading strategy. According to the current rule regarding maximum auction awards to a single bidder, the sum of a bidder's NLP in a security and its auction award must not exceed 35 percent. Accurately calculating the NLP is important to comply with this rule.

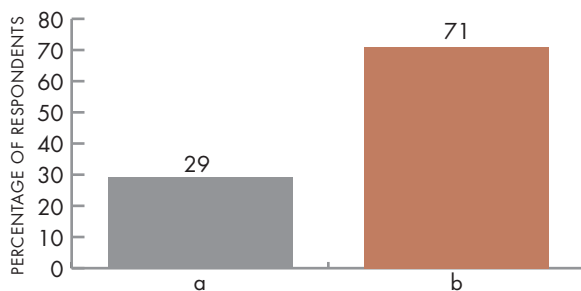
KEY THEMES

Key themes pertaining to the insurance sub-sector that were raised during the exercise included increases in claims, acts of civil authority, and associated financial risk management concerns.

Property/Casualty Insurance—Claim Payment Obligations

It is unlikely that there would be an excessive increase in the number of property casualty claims resulting from a pandemic flu. As a result, most insurance organizations reported that they would be able to handle the claim volume despite increased absenteeism. At the height of the pandemic, more than 70 percent of property/casualty organizations indicated that they believed they would "...be able to address catastrophic losses arising out of a hurricane, earthquake, or other natural or man-made disaster" (see Fig. 33). According to the National Association of Insurance Commissioners, its experience during Hurricane Katrina showed that even during "normal" times the increased claim volume coupled with the difficulty of servicing claims after a catastrophe stretches the typical Property/Casualty organization's resources almost to the breaking point.

FIG. 33



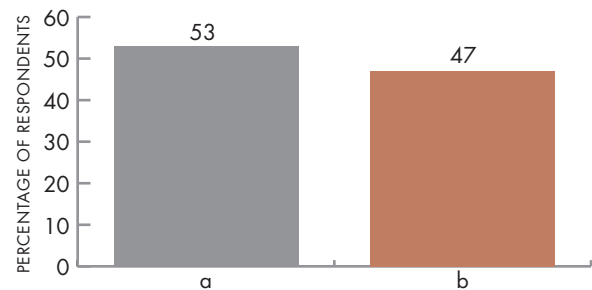
Property/Casualty Insurance Question: Will your organization be able to address catastrophic losses arising out of a hurricane, earthquake or other natural or man-made disaster during this stage of the pandemic? (scenario update 2)

a. No; b. Yes

Property/Casualty Insurance—Business Interruption

At the beginning of the pandemic, almost half of the property/casualty insurance participants (47 percent) responded they had a comprehensive understanding of the powers of civil authorities in the region(s) where their policyholders operate (see Fig. 34).

FIG. 34



Property/Casualty Insurance Question: Does your organization have a comprehensive understanding of the powers of civil authorities in the region(s) where your policyholders operate and has your organization developed relationships with relevant civil authorities and emergency managers to gather timely information on event cancellations, venue closings or other actions (acts of civil authority) that may be covered under business interruption coverage?

a. No; b. Yes

Furthermore, these firms have ongoing relationships with civil authorities and emergency managers that enable them to gather timely information about issues that may be covered under business interruption coverage. This is an important finding because for a loss of income to be covered, it must be a result of a civil authority prohibiting access to an area due to a direct physical loss of or damage to property other than at the described premises. Many insurance companies use rate service organizations to draft standardized contract language.

At the present time all rate service organizations have determined that a pandemic is an uninsurable event and have approved for their members an “Exclusion of Loss Due to Virus or Bacteria Endorsement” to include in their commercial property policies. This exclusion includes loss as a result of civil authority actions.

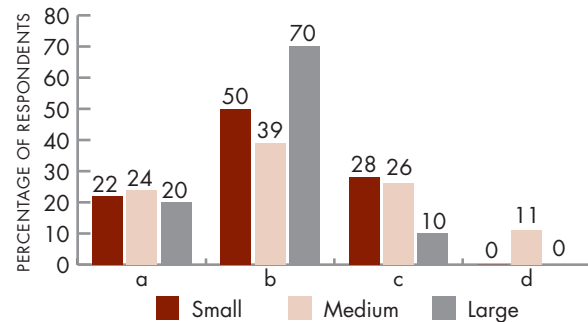
Health Insurance

A pandemic will challenge health insurers on multiple fronts, from increased service demand to decreased workforce. The ability (or inability) for insurance firms to confront these issues will compound the already strained healthcare delivery system.

The responses of health insurers to the questionnaires indicated several trends, including the following:

- » Progressively, small and medium organizations were adversely affected by the increase in volume of claims during the exercise (see Figs. 35 & 36)
- » Disruptions to insurers’ preauthorization policies were significant, which could result in treatment delays for those seeking medical care
- » During and after the peak of the pandemic, disruptions to new policyholder services were rated moderate to significant by most organizations
- » The ability of organizations to meet prompt claim payment obligations deteriorated as the exercise progressed
- » The ability to provide customer service functions for existing policyholders deteriorated as the exercise progressed

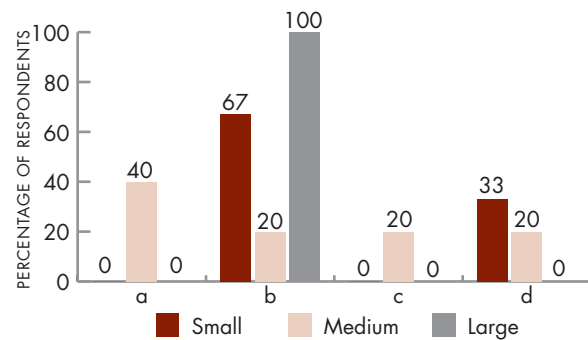
FIG. 35



Health Insurance Question: What is the extent of the impact of the 20 percent increase in claims and reduced value of investment securities in this scenario on your organization’s ability to maintain minimum capital? (scenario update 2)

a. No effect; b. Minimal; c. Moderate; d. Significant

FIG. 36



Health Insurance Question: What is the extent of the impact of the 50 percent increase in claims and reduced value of investment securities in this scenario on your organization’s ability to maintain minimum capital? (scenario update 3)

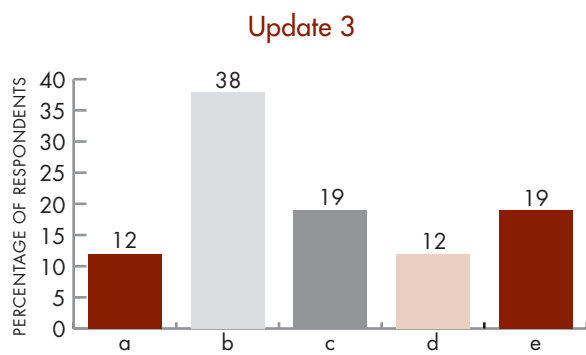
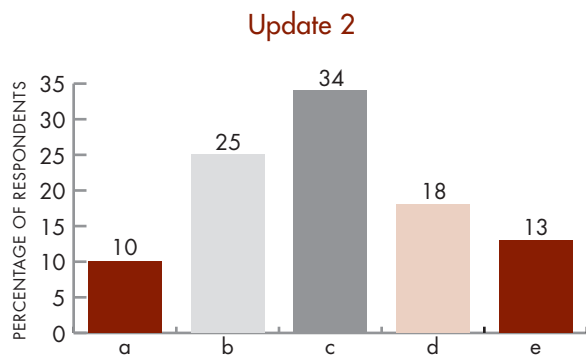
a. No effect; b. Minimal; c. Moderate; d. Significant

Life Insurance—Risk Management

Risk management tools help life insurers effectuate the long-range planning and resource deployment that would be necessary to minimize the impact of a pandemic. At the start of

the exercise, almost 60 percent of life insurers indicated that they had financial risk management tools to help them address the challenges of a pandemic. During the peak of the pandemic, 52 percent of life insurer respondents indicated that their financial risk management plans were moderately or significantly affected in "... helping to mitigate the risks associated with the circumstances presented in this scenario." By the end of the exercise, 31 percent responded in that manner when conditions were improving (see Fig. 37).

FIG. 37



Life Insurance Question: To what extent did your organization's financial risk management tools help to mitigate the risks associated with the circumstances presented in this scenario?

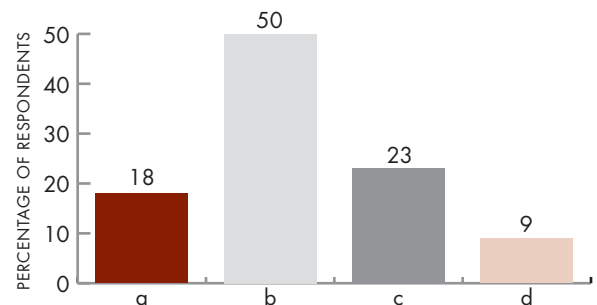
a. No effect; b. Minimal; c. Moderate; d. Significant; e. Not Applicable

Life Insurance—Minimum Capital

A severe pandemic would have a significant financial impact on life insurers because of the substantial increase in mortality claims. Many companies with large life insurance exposures have surplus capital that could only withstand mortality rates that were double the expected or predicted rates for 1 year. The exercise mortality rate (1.3 or 7.0 deaths per 1,000) would be 3 to 10 times higher than the expected annual mortality of insured lives, raising the potential for insolvency. In fact, based on a separate survey conducted by the New York State Insurance Department of its New York-licensed life insurers and reinsurers, a pandemic resulting in an additional 7.0 deaths per 1,000 would lead to a significant number of insurers becoming insolvent.

The exercise findings, however, show that only 9 percent of respondents expected a significant impact from an extra 1.3 deaths per 1,000, and only 13 percent expected a significant impact from an extra 7.0 deaths per 1,000. A majority of respondents indicated only a minimal or moderate impact (see Figs. 38 & 39).

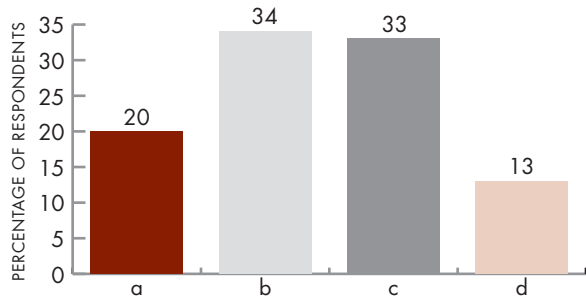
FIG. 38



Life Insurance Question: What is the extent of the impact of the additional claims caused by the increase of 1.3 deaths per thousand policies in-force and the reduced value of investment securities in this scenario on your organization's ability to maintain minimum capital? (scenario update 2)

a. No effects; b. Minimal; c. Moderate; d. Significant

FIG. 39



Life Insurance Question: What is the extent of the impact of the additional claims caused by the increase of 7.0 deaths per thousand policies in-force and the reduced value of investment securities in this scenario on your organization's ability to maintain minimum capital? (scenario update 3)

a. No effects; b. Minimal; c. Moderate; d. Significant

Future Considerations

During the process of analyzing the data and generating the overall findings, the analytic working group made a series of observations and noted possible next steps to enhance the understanding of the potential effects of a pandemic, to assist in future pandemic planning, and to strengthen the resilience of the financial services sector. This section is not intended to be all inclusive or prescriptive, but rather is intended to illustrate possible opportunities for further activities.

General Considerations

The following section raises potential future considerations that may be contemplated by all U.S. financial services sector participants as a result of this exercise.

- » As the financial services sector works to improve its planning activities, organizations may wish to consider participating in regional partnerships. Regional partnerships offer opportunities for members of the sector to work together to enhance information sharing and to improve coordination in the event of a crisis, including a pandemic. Such partnerships also create avenues for coordination with local, State, and Federal government agencies.
- » State and local policies, in particular school closing policies, may strongly affect employees and thus have indirect effects on financial organizations. Organizations may want to consider if State and local laws or policies may affect their employees during a crisis. Organizations may choose to consider cross-training additional employees to strengthen the resilience of their operations by preparing for the potential absence of employees.
- » The exercise did not investigate the willingness of employees to come to work in the context of the dangers—both real and perceived—posed by a pandemic. The issue of employee safety at the workplace may also be affected by State or Federal laws. Many States have the authority during pandemics to address this issue through both health codes and labor codes. Additional research and analysis may be necessary to determine if social distancing, the use of alternative worksites, and State laws might affect the ability of employees to come to work.
- » Organizations may wish to consider stockpiling and distributing anti-viral medications because they may reduce morbidity and mortality, and because they may diminish the overwhelming demands that will be placed on the healthcare system by a pandemic. In planning, however, organizations may want to consider analyzing relevant legal issues connected with the dispensing of medication and potential liability.

- » Disaster preparedness education is a useful tool in business continuity planning. Financial organizations may wish to consider adding disaster preparedness education programs to their overall business continuity strategy if they do not currently exist.
- » The financial services sector might benefit from a published list of planning issues associated with subsequent pandemic waves. Such a list would help financial organizations in their overall pandemic planning.
- » Open communication and coordination with critical service providers and suppliers is an important aspect of pandemic planning. Given the criticality of these relationships to the financial services sector, financial organizations may want to review and assess the pandemic plans of the vendors that support their operations.
- » Organizations may want to evaluate the potential effectiveness of their telecommuting plans during a severe pandemic when telecommunications and Internet congestion may diminish worker productivity. Organizations may want to consider regular testing of the systems that will be used for telecommuting.
- » The financial services sector, in cooperation with Federal authorities and telecommunications service providers, may want to review existing authorities and emergency powers regarding the prioritization of network traffic to gain a better understanding of the capabilities, limitations, and availability of telecommunications and IT infrastructure during a pandemic.

Banking Subsector–Specific Considerations

- » ATM availability often becomes a key customer concern in emergencies. Given the criticality of vendor relationships in maintaining ATMs, financial organizations may want to review and assess their vendors' pandemic plans to see that they are documented and tested to the same level as those of their own organization. Open communication and coordination with critical service providers and suppliers is an important aspect of pandemic planning.
- » Organizations may want to work together on plans to handle the distribution of banknotes during a crisis. Organizations may also want to work with their banknote delivery systems (e.g., armored-car services) to develop plans to provide a sufficient amount of banknotes during a crisis, focusing on the geographic needs of the organization.

- » Participant responses reflected the banking industry's preference for keeping branches open and providing continued customer service during emergencies. Organizations may wish to review their plans for reducing face-to-face encounters, modifying operating hours, and redeploying staff to critical offices to potentially guard against the spread of pandemic influenza. These strategies also may help organizations maintain morale among the well employees who are working by demonstrating the organization's commitment to shielding staff from harm.
- » Banking organizations of all sizes may want to review their contingency funding plans and stress test their plans for a possible need to provide customer forbearance. Organizations may also want to explore alternative funding sources to avoid undue concentration of these sources.
- » Banking organizations may wish to consider the benefits and costs of implementing mutual aid arrangements either bilaterally or through their trade organizations. State law considerations may impact the ability of banks to engage in these arrangements; any potential State law impediments could be discussed in advance with State regulators.
- » Participant responses reflected the extensive use of cross-training of staff to enable the continuation of operations. Organizations may wish to review existing delegation and back-up assignments to ensure the effectiveness of cross-training plans. In addition, organizations may desire to periodically review and test their delegation and back-up plans to ensure their adequacy for meeting emerging threats.
- » Participant responses indicate that there is potential value in the private sector opening a dialogue with the supervisory community to discuss identified concerns with regard to regulations.

- » The banking supervisory community and the private sector organizations may want to engage in further discussions about the temporary closure or relocation of branches to better understand how banks have incorporated these actions into contingency plans.

Markets (Securities and Derivatives) Subsector-Specific Considerations

General Considerations

The following section raises general considerations for U.S. financial market participants as a result of this exercise.

- » Clearance and settlement activities may be affected by absenteeism because of the manual nature of some of these processes. In the event of a pandemic, the markets may want to consider reducing the hours of trading if that is necessary to mitigate clearing and settlement backlogs.
- » Regulatory entities may seek to develop a coordinated response among the global markets if, for example, shortened trading days are considered.
- » Organizations may wish to consider enhancing pandemic plans that cross product lines to address potential absenteeism because there could be product-specific vulnerability tied to the absence of employees who perform critical functions.

- » Organizations may want to consider inter- and intra-departmental cross-training of employees to at least partially mitigate the effects of absenteeism during a pandemic. Cross-training employees may help ensure that critical functions will continue and may help identify internal and external opportunities to back up or disperse critical functions. For example, organizations may choose to look at technology solutions that enable straight-through processing.
- » Organizations that have not already done so may want to explore strategies that mitigate the potential effects of absenteeism, including geographic dispersion of critical functions, enhanced remote-access capability, outsourcing to qualified service providers, and use of branch locations for other business functions. Some of these strategies may require further coordination with regulatory entities and service providers to discuss interdependencies and possible joint planning activities.
- » Organizations may want to evaluate their existing exchange connectivity to decide if it should be enhanced to mitigate risk.
- » Market data disruptions or delays, whether due to transmission system issues, provider absenteeism, or problems in aggregating valid data, will have an effect on the markets. Organizations should have a thorough understanding of their clients' expectations and their own obligations for best execution, particularly in light of slow/stale market data. Organizations may choose to evaluate their potential vulnerability in the event of market data disruptions, document the approach, and decide how to communicate the approach to their clients.
- » Organizations may choose to review contractual obligations associated with providing research to determine whether or not to curtail new research during a pandemic.

- » Industry associations and regulatory entities may wish to work together to develop a better understanding of the types of regulatory relief that may be necessary to sustain the markets and still maintain the price transparency and safeguards necessary to protect their integrity and their obligations to their clients. Industry associations and regulatory entities may also want to consider regulatory relief issues for business continuity on an international scale.
- » Regulators and industry may wish to work collaboratively on efforts to analyze the types of remote operations and the rationales of requests for regulatory flexibility for such arrangements.

U.S. Treasury Securities— Specific Considerations

- » Auction participants may want to continue to test their ability to participate in regularly scheduled and unscheduled Treasury auctions during a crisis such as a pandemic.
- » Auction participants may want to test their alternative worksite locations to verify their ability to submit their auction bids. However, most primary dealers have successfully exercised bid submissions from an alternative worksite during live auctions and will continue to participate in live auctions from their contingency sites.
- » Auction participants may want to review their ability to submit bids during a pandemic by telephone as one alternative to be used if the IT infrastructure at their site is negatively affected or unavailable due to high levels of absenteeism. Primary dealers and other large submitters have specific instructions on the submission of emergency telephone bids during a contingency. On occasion, auction participants do submit emergency telephone bids if their IT infrastructure has been adversely impacted and prevents them from submitting bids electronically.

Insurance Subsector–Specific Considerations

Property/Casualty Insurance—Claim Payment

- » Property/casualty companies may wish to consider developing pandemic-specific procedures for handling claims following a natural disaster, such as a catastrophic hurricane, if it strikes during a pandemic.
- » Property/casualty companies may want to consider cross-training staff to provide the additional claims-handling capacity that might be needed if a catastrophe, such as a hurricane, occurred during a pandemic.
- » Property/casualty companies may want to consider the effect of absenteeism among their contracted adjuster force, and develop pandemic and catastrophe plans accordingly.

Property/Casualty Insurance—Business Interruption

- » Organizations may choose to continue to build relationships with civil authorities and emergency managers to gather timely information on any disaster, even though such preparations may not be as relevant in response to a pandemic as they would be to business interruption coverage. Actions taken by property/casualty insurance companies to establish relationships with civil authorities and emergency managers in advance of any emergency, including a pandemic, will help to integrate their response with that of the emergency management community.

- » Property/casualty organizations may want to examine the business interruption coverage they provide and determine if the “Exclusion of Loss Due to Virus or Bacteria” is applicable in all of the jurisdictions in which they operate.

Health Insurance

- » Health insurer services that affect access to care (e.g., pre-authorization, pharmacy service, and call center operation for members/subscribers) are extremely important during the onset stages of a pandemic. Unnecessary delays can disrupt the healthcare delivery system and its ability to control the disease. Organizations may want to consider reviewing their business continuity plans to mitigate unnecessary delays.
- » Some organizations may choose to share best practices with others in the insurance subsector.
- » Health insurers may want to consider using their resource management tools to ensure adequate coverage of services during a pandemic.
- » Delay and interruption to new policyholder services may cause gaps in coverage. As a result, applicants risk losing coverage for pre-existing conditions, such as illnesses caused by or resulting from a pandemic. Organizations may want to consider reviewing their business continuity plans to mitigate interruption to new policyholder services.
- » Health insurers may want to work closely with State insurance departments (and, in the case of Medicare Advantage and Medicare Prescription Drug Plans, the Federal Centers for Medicare & Medicaid Services) to address the need for emergency regulatory relief.

Life Insurance—Risk Management

- » Life insurers not currently using financial risk management tools may want to consider doing so.
- » Life insurers currently using financial risk management tools may want to identify the key factors in the apparent reduction in the effectiveness of those tools during the course of the exercise.
- » Life insurers may want to consider developing pandemic-specific financial risk management tools, given the duration and severity of the effects of a pandemic.
- » Life insurers may want to incorporate financial risk management specialists directly into their pandemic planning processes.
- » Life insurers may want to consider the impact of a pandemic on financial markets to develop more flexible and reliable financial risk management tools.

Life Insurance—Minimum Capital

- » Life insurers that have not considered the ability of the reinsurer to pay claims during a pandemic may want to incorporate such analysis as a part of their risk management activities.
- » In addition to testing these types of scenarios, life insurers may wish to look at the percentage increase in mortality that their companies could withstand during a pandemic and still remain solvent. Insurers may also want to consider testing scenarios in which the reinsurer will not be able to pay claims.

APPENDIX A

ACRONYMS

ALCO	Asset-Liability Committee	IRA	Individual Retirement Account
ATM	Automated Teller Machine	IT	Information Technology
CDC	Centers for Disease Control and Prevention	NASD	National Association of Stock Dealers
CFTC	Commodity Futures Trading Commission	NLP	Net Long Position
CHIPS	Clearing House Interbank Payments System	OATS	Order Audit Trail System
CMB	Cash Management Bill	POC	Point of Contact
FBIIC	Financial and Banking Information Infrastructure Committee	PPE	Personal Protective Equipment
FFIEC	Federal Financial Institutions Examination Council	SIFMA	Securities Industry and Financial Markets Association
FINRA	Financial Industry Regulatory Authority	SOX	Sarbanes-Oxley
FOCUS	Financial and Operational Combined Uniform	SWIFT	Society for Worldwide Interbank Financial Telecommunication
FS-ISAC	Financial Services Information Sharing and Analysis Center	TAAPS	Treasury Automated Auction Processing System
FSSCC	Financial Services Sector Coordinating Council for Critical Infrastructure Protection and Homeland Security	TRACE	Trade Reporting and Compliance Engine

APPENDIX B

REGISTRATION INFORMATION FORM

1. Point of Contact (POC)

User Name (for website login):

PRIMARY:

1. Institution: _____

2. Name (Last, First): _____

3. Business Unit or Functional Area: _____

4. Mailing Address: _____

5. Phone Number: _____

6. E-mail Address: _____

ALTERNATE:

1. Institution: _____

2. Name (Last, First): _____

3. Business Unit or Functional Area: _____

4. Mailing Address: _____

5. Phone Number: _____

6. E-mail Address: _____

2. Level of firm or institution's participation (Check one)

- Enterprise Level (representing your entire firm/institution)
- Lines of Business (representing a division or sector within a larger firm)
- Other

3. Primary Business Lines (Check all that apply)

Banking Services:

- Commercial Banking
- Retail Banking
- Private Banking
- Investment Banking
- Bank Cards (Credit/Debit)
- Merchant Card Providers (Credit Card machine and Payment Network)

REGISTRATION INFORMATION FORM

Investment Services:

- Asset Management
- Custody Services and Securities Processing
- Hedge Fund Management

Insurance Related:

- Insurance Brokerage
- Insurance Underwriting
- Reinsurance

Brokerage/Exchanges:

- Securities Firms, Bond Dealers, and Discount Brokers
- Futures Brokers (FCM/IB)
- Stock Exchange
- Commodity Exchange
- Government Sponsored Enterprise (GSE)
- Regulator
- Industry Association
- Clearing, Settlement, Service Bureaus, Messaging Services, and Other Industry Utilities

4. Regions and major financial centers where you operate your primary business lines (Check all that apply)

Major Financial Centers:

- Greater New York Metropolitan Area
- Greater Chicago Metropolitan Area
- Greater San Francisco Metropolitan Area
- Greater Los Angeles Metropolitan Area
- Greater Miami Metropolitan Area

U.S. Regions Where You Conduct Your Primary Business:

- Northeast (CT, MA, ME, NH, NJ, PA, RI, VT)
- Mid-Atlantic (DE, DC, MD, NC, VA, WV)
- South (AL, AR, FL, GA, KY, LA, MS, SC, TN)
- Southwest (AZ, NM, OK, TX)
- Mid-West (IL, IN, IA, KS, MI, MN, MO, NE, OH, WI)
- Mountain (CO, MT, ID, ND, SD, WY, UT)
- West (AK, CA, HI, NV, OR, WA)

REGISTRATION INFORMATION FORM

5. Revenue (USD) (Check one)

- Less than 100 Million
- 100—500 Million
- 500—1 Billion
- 1—50 Billion
- 50—100 Billion
- Over 100 Billion

6. Assets (USD) (Check one)

- Less Than 100 Million
- 100—500 Million
- 500 Million—2 Billion
- 2—10 Billion
- 10—50 Billion
- 50—200 Billion
- 200—500 Billion
- 500 Billion—1 Trillion
- Over 1 Trillion

7. Employees (Check one)

- Less than 250
- 250—500
- 500—1,000
- 1,000—5,000
- 5,000—10,000
- 10,000—25,000
- 25,000—50,000
- 50,000—100,000
- Over 100,000

For additional information on the FBIIC/FSSCC
Pandemic Flu Exercise of 2007, please visit:

<http://www.fspanfluexercise.com>

The FBIIC/FSSCC Pandemic Flu Exercise of 2007 After Action Report
January 2008