BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM
WASHINGTON, D. C. 20551

JEROME H. POWELL
CHAIRMAN

July 10, 2019

The Honorable Brian Schatz
United States Senate
Washington, D.C. 20510

Dear Senator:

Enclosed are my responses to the questions you submitted following the February 26, 2019,[1] hearing before the Committee on Banking, Housing, and Urban Affairs. A copy also has been forwarded to the Committee for inclusion in the hearing record.

Please let me know if I may be of further assistance.

Sincerely,

Jerome H. Powell

Enclosure

[1] Questions for the record related to this hearing were received on March 6, 2019.

<u>Questions for The Honorable Jerome H. Powell, Chair, Board of Governors of the Federal Reserve System from Senator Schatz:</u>

1. The U.S. government's Fourth National Climate Assessment says climate change will "cause substantial net damage to the U.S. economy throughout this century," with annual losses in some sectors projected to exceed the current GDP of many U.S. states. Climate-related extreme weather will "increasingly affect our trade and economy, including import and export prices." It will also disrupt operations and supply chains, and "lead to large-scale shifts in the availability and prices of many agricultural products across the world."

- **Has the Federal Reserve specifically examined data in the National Climate Assessment on the economic impact of different climate change scenarios?**

The longer-term predicted impacts of climate change are generally beyond the scope of monetary policy. Although it is important for us to understand how weather is affecting the economy in real time and respond accordingly, monetary policy is not well suited to address longer-term economic disruptions associated with severe weather events. Longer-term predictions such as those in the Fourth National Climate Change Assessment report are an issue for Congress and the Administration to consider.

- **Has the Federal Reserve examined any data, produced by the U.S. government or by others, on the economic impact of increasingly severe weather and climate events, such as flooding, sea level rise, drought, wildfires, and deadly storms?**

The Federal Reserve takes into account the severity of weather events in assessing current economic conditions as part of our deliberations about the appropriate stance of monetary policy. For example, our staff has relied on data from the Federal Emergency Management Agency and the Department of Energy to gauge the disruptions to oil and gas extraction, petroleum refining, and petrochemical and plastic resin production in the wake of hurricanes that affected the Gulf region. Our staff regularly uses daily measures of temperatures and snowfall from National Oceanic and Atmospheric Administration (NOAA) weather stations to understand better, how severe weather may be affecting economic activity in specific areas. In addition, our staff recently has begun to use credit and debit card transaction data to gauge how specific types of severe weather events might affect consumer spending in areas affected by those events.

- **Have you considered how different climate change scenarios would impact the Federal Reserve's statutory mandate to stabilize prices, maximize employment, and moderate long-term interest rates?**

As I have noted previously, while Congress has entrusted the matter of addressing climate change to other agencies, the Federal Reserve uses its authorities and tools to prepare financial institutions for vulnerabilities, including severe weather events. Over the short-term, severe weather events have the potential to inflict serious damage to the lives of individuals and families, to devastate local economies and even temporarily affect national economic output and employment. The Federal Reserve, in its conduct of monetary policy and related decisionmaking, is concerned with short- and medium-term developments that may change materially over quarters and a relatively small number of years, rather than the decades associated with longer-term changes.

- **Have you considered how different climate change scenarios would impact the Federal Reserve's statutory mandate to promote the safety and soundness of supervised institutions and the stability of the overall financial system?**

The Federal Reserve Board (Board) has supervisory and regulatory authority over a variety of financial institutions and activities, with the goal of promoting a safe, sound, efficient, and accessible financial system that supports the growth and stability of the U.S. economy. In carrying out the responsibility to promote the safety and soundness of individual financial institutions that we supervise, we assess, among other things, supervised firms' ability to identify, measure, monitor, and control risks, including those related to severe weather events. The Federal Reserve has particular tools and mechanisms for monitoring the financial system.

One of the most critical elements of safety and soundness is a financial institution's ability to absorb substantial unexpected losses and continue to lend to households and businesses. Severe weather events are one potential source of such losses, especially for firms with exposures concentrated in regions that are likely to experience those events. We routinely examine banks' management of concentration risk and recommend or, if necessary, enforce, enhancements, including additional capital, where warranted. For example, our supervisors consider any evidence of a rising incidence of severe weather events, including coastal flooding, in those areas where it is a factor.

To that end, the Board issued supervisory guidance in 1996, to ensure that bank management takes into account all relevant risks in their underwriting and review practices. Our guidance with respect to credit underwriting and asset quality provides supervisors the flexibility necessary to address risks from severe weather events.[1] In addition, our guidance also specifically addresses lending to sectors where assessments of these risks are critical for due diligence and underwriting.[2]

The Board also ensures that financial institutions that are core clearing and settlement organizations, or play significant roles in critical financial markets maintain sound practices to ensure that they can recover and resume their activities supporting these markets following a severe weather event. In addition, the Board has provided guidance to banking institutions directly affected by an event that results in a Presidential declaration of a major disaster. The supervisory approach described in the guidance provides examiners flexibility to conduct

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[1] See, e.g., 12 CFR Part 208, App. D-1 to Part 208 ("Interagency Guidelines Establishing Standards for Safety and Soundness"); Board of Governors of the Federal Reserve System, "SR 96-36: Guidance on Evaluating Activities Under the Responsibility of U.S. Branches, Agencies and Nonbank Subsidiaries of Foreign Banking Organizations (FBOs)" (Dec. 19, 1996), https://www.federalreserve.gov/boarddocs/srletters/1996/sr9636.htm; Federal Deposit Insurance Corporation, "Uniform Financial Institutions Rating System," 62 Fed. Reg. 752 (Jan. 6, 1997).

[2] See, e.g., Board of Governors of the Federal Reserve System, "Commercial Bank Examination Manual," §§ 2142.1 ("Agricultural Credit Risk Management"), 2150.1 ("Energy Lending—Reserve-Based Loans") (rev. Oct. 2018), https://www.federalreserve.gov/publications/files/cbem.pdf.

supervisory activities and formulate supervisory responses that take into account the issues confronting institutions impacted by such events.

2. Does the Federal Reserve coordinate with other central banks and bank supervisors around the world to discuss best practices for managing emerging risks? If no, why not? If yes, have climate risks to financial institutions been discussed?

In its role promoting financial stability, the Federal Reserve cooperates and coordinates with many other central banks and bank supervisors and regulators, both bilaterally and through international standard setting bodies, such as the Basel Committee on Banking Supervision and the Financial Stability Board (FSB). We discuss climate risks frequently with our international central bank colleagues. Our engagement is intended to help identify and address vulnerabilities in the global financial system and to develop stronger regulatory and supervisory policies in order to help ensure a more stable and resilient global financial system.

Additionally, the Federal Reserve Board is an active participant in the proceedings of the FSB, which was established after the financial crisis to strengthen financial systems and increase the stability of international financial markets, and has undertaken relevant work in this area. Of particular interest are efforts to promote enhanced risk management disclosure by financial institutions. In this regard, the FSB established in 2015 the Task Force on Climate-related Financial Disclosures (TCFD), a global, industry-led effort to develop recommendations for consistent climate-related financial disclosures, for use by companies in providing information to investors, lenders, insurers, and others. The TCFD considers the physical, liability, and transition risks associated with climate change and what constitutes effective financial disclosures across industries.

3. Your counterpart in the United Kingdom, Mark Carney, recently announced that the Bank of England is planning to include the impact of climate change in its bank stress tests as early as next year. The Bank of England is taking this step because it believes that responding to climate-related financial risks "helps ensure the Bank can fulfil its mission to maintain monetary and financial stability."

- **Are you aware of the Bank of England's plans to incorporate climate risk into bank stress testing?**

The Board is aware of the Bank of England's (BOE) plans to incorporate severe weather risk into bank stress testing. The BOE has said it will conduct this analysis as part of its exploratory scenario either next year or three years hence. As we understand, banks cannot pass or fail these exploratory scenarios; instead, the scenarios are designed to increase transparency and to focus on specific issues.

- **Do you think it would be productive for the Federal Reserve to learn more about the Bank of England's efforts to incorporate climate risks into bank stress testing?**
- **If not, please explain why the Federal Reserve does not think it is worth learning more about how climate risks could impact the safety and soundness of financial institutions or the stability of the financial system.**

Federal Reserve staff meet regularly to exchange views with our counterparts at the BOE and other global regulators. We look forward to seeing the structure of and results of the exercise, should the BOE ultimately decide to conduct these tests.

4. In his September 2010 testimony before the Financial Crisis Inquiry Commission, former Federal Reserve Chairman Ben Bernanke said the most prominent trigger of the 2007-08 global financial crisis "was the prospect of significant losses on residential mortgage loans." Chairman Bernanke explained, "When house prices declined, the equity of those homeowners was quickly wiped out; in turn, 'underwater' borrowers who owed more than their houses were worth were much more likely to default on their mortgage payments."

The National Climate Assessment found it is likely that "between \$66 billion and \$106 billion worth of real estate will be below sea level by 2050; and \$238 billion to \$507 billion, by 2100." It is reasonable to expect that frequent and intense coastal property damage under such scenarios will drastically reduce property values.

We do not need to wait to 2050 to see the impact of climate change on property values. Coastal flooding from sea level rise is already eroding property values. A recent analysis by First Street Foundation estimated that property value losses from coastal flooding in 17 states totaled almost \$16 billion from 2005 to 2017.[1]

- **Has the Federal Reserve assessed the risks that extreme weather events pose to the U.S. housing market?**

[1] First Street Foundation, "Rising Seas Erode \$15.8 billion in Home Value from Maine to Mississippi," February 27, 2019, available at: https://assets.floodiq.com/2019/02/9ddfda5c3f7295fd97d60332bb14c042-firststreet-floodiq-mid-atlantc-release.pdf.

The Board conducts an active research program on a broad array of topics in economics and finance. As part of this broader research mission, research staff write working papers and publish articles in peer-reviewed journals. This research includes studies on a number of topics that pertain to modeling the economic effects of severe weather events, modeling uncertainty and risks from such events in financial markets, and estimating the effects of these events on consumer and business activity, as well as on local and aggregate real estate markets. In recent years, Board economists have authored more than 30 papers on the impact of climate change on the financial sector and undertaken research on the economics of weather, natural disasters, climate policy, and related risks.

- **How does the Federal Reserve assess the risk of natural disasters that are increasing in frequency and severity on the loan portfolios of supervised financial institutions and the financial system as a whole?**

The Board's framework for monitoring the stability of the U.S. financial system distinguishes between shocks to and vulnerabilities of the financial system.[3] Shocks are typically surprises and are inherently difficult to predict. Vulnerabilities tend to build up over time and are the aspects of the financial system that are most expected to cause widespread problems in times of stress. Thus, in our framework, severe weather events are treated as shocks to the system. For example, the possibility of large losses to property and casualty insurers from historically atypical timing, intensity, or frequency of hurricane damages represents one such potential shock. If that shock led to significant strains on capital positions of affected firms, those losses could expose or exacerbate other vulnerabilities, such as funding risks, through the firms' connections to the broader financial system.

While the Board's framework provides a systematic way to assess financial stability, some potential risks do not fit neatly into that framework. Some potential risks are difficult to quantify, especially if they materialize over such a long horizon that methods beyond near-term analysis and monitoring are appropriate. Accordingly, we rely on ongoing research by academics, our staff, and other experts to improve our understanding and measurement of such longer-run or difficult-to-quantify risks.

[3] See Board of Governors of the Federal Reserve System, *Financial Stability Report* (May 2019), https://www.federalreserve.gov/publications/files/financial-stability-report-201905.pdf.