Preface

The creation of the Office of Financial Research represents a milestone in the efforts to strengthen America's financial system.

The financial crisis made clear that the understanding of the financial system was deficient in many respects. Market participants and regulators broadly misperceived the extent of leverage and maturity transformation. They did not see the migration of such activities to unregulated or lightly regulated financial companies and markets in the so-called shadow banking system. And they collectively underestimated how disruptions could spread horizontally across interconnected companies and markets and impair the functioning of the financial system, with severe consequences for the economy.

Likewise, the crisis revealed significant deficiencies in the data available to monitor the financial system. Financial data collected were too aggregated, too limited in scope, too out of date, or otherwise incomplete. The crisis demonstrated the need to reform the data collection and validation process and to strengthen data standards in order to improve the utility of data both for regulators and for market participants. In contrast with the local jurisdictions of regulators, the global nature of financial markets and institutions complicated that process.

Through the Dodd-Frank Act, Congress addressed many of these shortcomings. It created the Financial Stability Oversight Council (FSOC or Council), consisting of the federal financial regulators and others with oversight responsibilities, to identify threats to the financial stability of the United States, to respond to those threats, and to promote market discipline. It also created the Office of Financial Research (OFR or Office) to serve the needs of the Council and member agencies, to collect and standardize financial data, to perform essential research, and to develop new tools for measuring and monitoring risk in the financial system.

This inaugural Annual Report describes how the OFR is working to satisfy its statutory mandates and mission in four areas:

- **To analyze threats to financial stability.** The Office is developing and implementing metrics for measuring risks to financial stability. The Office is evaluating methods in current use, considering their effectiveness both for individual firms and systemwide. It is our statutory mandate to monitor, investigate, and report to Congress and the Council on changes in those risks. Gaps in analysis, data, and data standards represent threats to financial stability, and helping to fill those gaps is also part of the OFR's mandate.

- **To conduct research on financial stability.** The Office is conducting research to enable monitoring and investigation of threats to financial stability; to analyze regulation of financial entities or markets; to evaluate and report on stress tests or other stability-related evaluations of financial entities; to investigate and report on disruptions and failures in financial markets; and to conduct studies about and provide advice on the impact of policies related to financial stability. The Office is also collaborating with regulators, market participants, and academics to promote best practices in financial risk management.

- **To address data gaps.** The Office is beginning to help ensure that policymakers as well as market participants, where appropriate, have access to reliable, high-quality financial data in order to understand the state of the financial system, how it is developing and transforming risks, and the nature of its vulnerabilities. The Office is helping the Council and member agencies determine data needs, assess gaps in the scope or quality of available data, and help prioritize and fill those gaps. The Office may require financial companies to submit data, including transaction and position data, as necessary to improve the analysis of financial stability, and will take all necessary and appropriate precautions to ensure that any data so submitted will be stored and used safely and securely.

- **To promote data standards.** The Office is leading efforts to improve financial data and information standards, working closely with financial regulators and the industry. Standardization is essential to improve the quality and transparency of financial data. It will help risk managers and supervisors compare, aggregate, link, and analyze data about financial entities, instruments, and markets, and the threats they pose to financial stability. The Office may promulgate regulations to standardize the types and formats of data reported and collected on behalf of the regulatory agencies. The Office will also produce and maintain catalogues of reference entities and instruments. The first ongoing standardization priority is to establish a Legal Entity Identifier (LEI), a unique, global standard for identifying parties to financial transactions. The LEI initiative has made important progress in 2012 with strong support from both the private sector and the international regulatory community.

A key component of the OFR's mission is to support the Council and its members. The OFR is supporting the Council by providing data and analysis related to the Council's evaluation of nonbank financial companies for potential designation for Federal Reserve supervision and enhanced prudential standards. Much of the OFR's work analyzing financial stability, conducting research, collecting data, and promoting data standards has involved collaboration with Council members.

Unlike the other federal financial agencies in the Council, however, the OFR has no supervisory responsibilities; we are focused purely on research, data, and analysis. That is important for two reasons. First, significant gaps remain in the analytical work done by the Council member agencies because none of them individually has authority to look across the entire financial system—in other words, to implement a *macroprudential* approach to research and data activities. In part, those gaps arise in financial activities that take place in less-regulated markets and across national boundaries. Congress created the OFR as a separate office to produce the "connective tissue" filling gaps in both information and analytics. That is a key rationale for the Office's separate research and data mission.

A second reason why the Office's separate research and data mission matters is that it permits the Office to offer a different perspective, one that should enhance the Council's peripheral vision. That perspective is critical in identifying threats to financial stability and in evaluating stress tests and other tools in the macroprudential toolkit individually and taken together. It also can help the regulatory community avoid accepting the conventional wisdom when a skeptical look is needed.

Both factors are critical in assessing the OFR's mandates. In particular, they help explain why the OFR should conduct and sponsor financial stability research even when others in the Council are engaged in similar work. In addition, new data collected by the OFR will permit research that previously was difficult to conduct.

Meanwhile, with our broad mandates come significant responsibilities. Three stand out: accountability to Congress and the public; the need to be thoughtful and judicious in collecting data; and a resolute commitment to information security.

The OFR is accountable through several channels. Congress has oversight authority over the OFR: the Dodd-Frank Act requires the Director to testify regularly before Congress, and the OFR provides the Congress with this first Annual Report on its activities to be consistent with requirements under that statute. The Office will also provide a second annual report on its human resources practices later this year. It also published its initial strategic framework earlier this year. In addition, the OFR publishes its budget as part of the President's budget and it is included as part of the Treasury Department's consolidated audit. At the same time, the Dodd-Frank Act provides authority for Treasury's Inspector General, the Government Accountability Office, and the Council of Inspectors General on Financial Oversight to oversee the activities of the OFR.

The OFR will not collect data for collection's sake. Indeed, the Dodd-Frank Act requires that the OFR not duplicate others' data collection efforts. The OFR is working with the federal financial supervisors to inventory the data they already collect and to improve data-sharing among them—creating economies of scale, lowering costs, and reducing regulatory burden. While the opportunities are immense for improving financial data available both to supervisors and to financial companies themselves, the Office is sensitive to the potential costs. And, of course, the Dodd-Frank Act does not contemplate collecting and the OFR will not collect any information from consumers.

Data security is the highest priority for the OFR. As an office of the Department of the Treasury, the OFR utilizes Treasury's sophisticated security systems to protect sensitive data. The OFR is also implementing additional controls for OFR-specific systems, including a secure data enclave within Treasury's IT infrastructure. Access to confidential information will only be granted to personnel that require it to perform specific functions, and the OFR will regularly monitor and verify its use to protect against unauthorized access. In addition, the OFR is collaborating with other Council members to develop a mapping among data classification structures and tools to support secure collaboration and data-sharing. Such tools include a data transmission protocol currently used by other Council members that will enable interagency data exchange and a secure collaboration tool for sharing documents.

The discussions in this Annual Report should make clear the importance, breadth, and scope of the OFR's mandates. They should not obscure the need for humility in pursuing those mandates, because the precise causes of financial crises are fundamentally uncertain. And they should underscore two other facts. First, better analysis and data can help reduce this uncertainty and inform the design of the shock absorbers and guardrails needed to make the financial system more resilient and less prone to shocks. Second, while the OFR's work is well under way, it will take time and resources to build its capabilities in each of these areas. Building a technological infrastructure must be done with care to ensure a secure environment in which confidential data are always protected.

1 Executive Summary

This inaugural OFR Annual Report details the Office's progress in meeting its mission and statutory requirements. The report must assess the state of the U.S. financial system, including: (1) An analysis of any threats to the financial stability of the United States; (2) The status of the efforts of the Office in meeting its mission; and (3) Key findings from the research and analysis of the financial system by the Office.[1]

Chapters 2 and 3 describe the Office's approach to analyzing threats to financial stability and conducting essential research. Chapters 4 and 5 describe the Office's agenda for addressing data gaps through three types of strategy: (1) Helping to better organize existing data, (2) Promoting data standards, and, (3) Collecting data that are otherwise not available to the OFR and other FSOC members. Chapter 5 focuses on the Office's agenda for promoting data standards, which began with the widely supported initiative to create a global Legal Entity Identifier (LEI).

The OFR's four agendas—analyzing threats to financial stability, conducting research, addressing data gaps, and promoting data standards—are highly complementary. In pursuing them, key principles will guide the Office: Accountability, an emphasis on a cost-effective approach to meeting our mandates, and an unwavering commitment to information security.

Analyzing Threats to Financial Stability

There is an emerging consensus that policymakers need to understand the functioning of the entire financial system—of institutions and markets—in order to assess and monitor threats to financial stability; to appreciate how those threats propagate from one institution to many, or from one market to others; and to evaluate mitigants to address those risks.

"Financial stability" means that the financial system is operating sufficiently to provide its basic functions for the economy even under stress. Our framework includes an analysis of the six basic functions of the financial system—credit allocation and leverage, maturity transformation, risk transfer, price discovery, liquidity provision, and facilitation of payments—and an assessment of how threats may disrupt their functioning. In our taxonomy, such threats to financial stability can emerge from within or outside the financial system, and they can be either cyclical or structural. Similarly, the FSOC Annual Report describes a taxonomy of internal or external shocks that may interact with structural vulnerabilities in the financial system to disrupt financial stability. Thus both taxonomies are aligned with the important point that, even absent external shocks, financial activity can generate threats to financial stability. Typically those occur when market participants have incentives to take on excessive risks due to a lack of market discipline, opaque (mis)pricing of risk, or other flaws in the policy guardrails that should curb those incentives.

The U.S. economy and financial system today are still recovering from the financial crisis and recession that began in 2007. The slow recovery in both owes importantly to the legacy of the crisis that has also left two key cyclical risks in the financial system—the ongoing weakness in housing finance and the historically low levels of interest rates. Housing finance remains challenged due to still-dysfunctional securitization markets and the consequent lack of private market interest, which has been partly filled by an outsized role for government. Low interest rates, while beneficial to the economy in the near-term, may have long-term adverse consequences if large numbers of market participants take on excessive credit risk or duration risk. Supervisors have expressed concerns in both areas.

Structural vulnerabilities within the financial system remain in short-term funding and derivatives markets. While important reforms are now under way in the derivatives markets, largely in response to Dodd-Frank mandates, short-term funding markets remain subject to run risk, and more needs to be done. External to the financial system, financial stability concerns are focused prominently on the euro area sovereign debt crisis and on the U.S. fiscal outlook. Policymakers have taken measures to promote a housing recovery but the market remains depressed.

Another risk is that the mitigants in place to promote stability in the financial system won't work as intended. Those mitigants include both supervisory monitoring of financial markets and internal risk management within financial companies. Both need to constantly update their approach, including their use of mathematical models, to keep up with rapidly changing business practices.

Most important from the perspective of the OFR's mandate, the lack of high-quality data and weaknesses in data standards still represent a critical potential source of risks to the financial system as, more than ever, both supervisors and company risk managers rely upon such data to carry out their responsibilities.

Conducting Research on Financial Stability

The OFR is required by statute to perform essential research on risks to financial stability and to evaluate responses to those risks. This report provides analysis in three specific priority areas identified in Dodd-Frank: To develop metrics for measuring risks to financial stability; to evaluate stress tests that can aid in financial stability analysis; and to promote best practices in financial institution risk management. Such a focus must and will be a hallmark of the OFR's research and data efforts going forward.

The academic community has proposed hundreds of financial stability measures since the financial crisis. Some of these measures seek to provide forward-looking indicators of financial stress, for example, by revealing cyclical upswings in the use of leverage or in the level of asset prices; others seek to explain current financial conditions and the vulnerabilities of the system to a shock, for example, by revealing possible sources of contagion in a crisis through connections among financial market participants. The OFR's first published working paper surveyed 31 of these measures in some depth (Bisias and others, 2012). Section 3.1 in this report represents a preliminary effort to take that analysis a step further. We evaluate 11 of these measures by comparing their performance during four historical financial crises—1929, 1987, 1998, and 2008. This exercise illustrates the strengths and weaknesses of different approaches. An overriding message is that gaps in financial data constrain the current generation of measures. Looking ahead, the OFR will work to fill these data gaps in order to improve these analytical tools and will take a careful, thoughtful approach to this work.

Another important development following the financial crisis is the increasing use of stress tests as a financial stability tool. The Federal Reserve, working with other U.S. supervisors, carried out stress test exercises in 2009, 2011, and 2012 that subjected large financial firms to similar theoretical shocks, in some cases revealing capital gaps that companies were required to address. Section 3.2 describes how supervisors can use stress tests to evaluate the vulnerability of the financial system to shocks and how stress tests can be extended to incorporate feedback from the financial system to the economy and contagion effects within financial markets. It also discusses two methodologies that could be useful in the ongoing development of stress tests: agent-based models, which simulate the behaviors of market participants to garner insights into market dynamics during crises, and reverse stress tests, which evaluate the types of scenarios that might produce adverse outcomes.

A third area of OFR research lies in the quality of risk management at large financial institutions, which, of course, has always been a central focus for supervisors. This was the topic of the OFR's second working paper (Flannery and others, 2012). Section 3.3 discusses the evolution of best practices and challenges in counterparty risk management, an important area both for individual firm risk managers and for those concerned with limiting financial contagion during periods of market uncertainty. Counterparty risk arises in any transaction in which firms make commitments to each other—derivatives, short-term funding markets, credit guarantees—and can be an important source of contagion when market participants doubt each other's soundness.

Addressing Data Gaps

The OFR was created in large part to fill knowledge gaps and reduce inefficiencies in supervisors' collection and use of data. The OFR follows a three-step process in setting its data agenda: (1) Identify financial stability data needs; (2) Determine data gaps and weaknesses; and, (3) Prioritize and fill these gaps by better organizing existing data, promoting data standards, and collecting new data where necessary.

Chapter 4 describes how the OFR will execute its data agenda and ensure a secure data environment. It describes how the Office is working to identify and address data needs and data gaps among regulators and to define best practices that can be leveraged across Council member agencies. The OFR is building a descriptive inventory of data that the Council member agencies already purchase or collect. This inventory will help avoid duplication, trim costs, minimize the regulatory burden, and take advantage of existing data sources to the extent possible.

The Office identifies and prioritizes data gaps in the course of its own research and monitoring, at the behest of the Council, or through interaction with Council agencies and other stakeholders. Section 4.2 examines factors affecting financial stability and the need for more and better data on leverage, liquidity, and interconnectedness, with a focus on derivatives and short-term funding markets. In our judgment, these data are still of low quality, and the policymaking and risk-monitoring payoffs from improving them would be substantial.

Promoting Data Standards

Data standards provide common, clear definitions for financial entities, instruments, positions, and transactions. Common definitions promote *comparability*, which means that information can be reliably combined from different sources and systems and that terms and definitions mean the same thing regardless of where the data come from.

The lack of high-quality, consistent, and accessible data was a key source of risk during the recent financial crisis. As concerns spread about certain assets, particularly those related to subprime mortgages, financial companies often were unable to aggregate their own exposures or evaluate the exposures of their counterparties to those assets. Supervisors were similarly challenged. Even in the ordinary course of business, gaps and overlaps in data standards create unnecessary burdens for managers of financial institutions and their supervisors.

It would be difficult or impossible for the OFR to conduct its essential financial stability monitoring function without better data standards in the financial world. Standardization will allow more consistent and complete reporting, so data available to supervisors will be more accurate, more comparable across firms and industries, and easier to use. It will improve the ability of regulators to respond quickly as needed to new developments that could affect financial stability and to resolve troubled financial institutions.

Better data standards will be equally valuable to risk managers at financial companies. Standards allow risk managers to aggregate individual transactions and positions into a complete and accurate picture of the enterprise. By making it easier to link and aggregate information, standards enable firms to use the same basic data both for reporting to regulators and for managing their business.

Standardization will also improve market discipline by giving market participants a more transparent picture of firms' activities.

Chapter 5 describes the OFR's approach to promoting improvements in data standards used in the financial industry. The OFR's goals for data standards include the need for data integrity and quality control, data security, data-sharing protocols, and data management. The OFR's first priority is to support domestic and global efforts to establish an LEI for the benefit of macroprudential regulators and of researchers and financial market participants. These efforts have made important progress in 2012 with the publication of a new International Organization for Standardization standard and the endorsement by the Group of Twenty Finance Ministers and Central Bank Governors (G20) of a March 2013 deadline for global implementation.

The Agenda Ahead

Our priorities for the coming year include work to develop more robust analytical frameworks for analysis to assess and monitor threats to financial stability, to evaluate mitigants to those threats, and to improve the scope and quality of financial data required for that work. Accordingly, we will focus on the forces that promote the migration of financial activities, including maturity transformation and the creation of money-like liabilities, into unregulated or lightly regulated markets—the so-called shadow banking system—and we will investigate in depth the behavior of short-term funding markets and collect better data on repo markets. We will build on the work on the three topics outlined in this report—indicators of threats to financial stability, stress testing, and risk management. We will employ network analysis and new data to research interconnectedness among financial institutions. Our data agenda is tied closely to our research agenda and includes further work on data standards to improve the quality of existing and new information.

Endnote

1. This report complements the Annual Report of the Financial Stability Oversight Council, to which the OFR contributes in fulfillment of its mandate. The Council report provides a broad overview of the financial system, its risks and vulnerabilities, and the policy recommendations and priorities of the regulatory agencies. The OFR's report more narrowly describes the work of one Office and its in-depth analysis of the financial system and potential threats to stability.

References for Chapter 1

Bisias, Dimitrios, Mark Flood, Andrew W. Lo, and Stavros Valavanis. "A Survey of Systemic Risk Analytics." Working Paper #0001, Washington, DC: Office of Financial Research, January 15, 2012.

Flannery, Mark J., Paul Glasserman, David K.A. Mordecai, and Cliff Rossi. "Forging Best Practices in Risk Management." Working Paper #0002, Washington, DC: Office of Financial Research, March 26, 2012.