



MASSACHUSETTS INSTITUTE OF TECHNOLOGY
CENTER FOR FINANCE AND POLICY

MIT Center for Finance and Policy

Crowd-sourcing a better definition of a SIFI

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The MIT Center for Finance and Policy recently announced the winners of its first crowd-sourced contest, “What is a Systemically Important Financial Institution?” A collaboration between the MIT Center for Finance and Policy and the Harvard Crowd Innovation Laboratory, the contest was launched to generate new proposals to specify sets of criteria that regulators should apply to designate a financial institution as systemically important.

This brief provides some background on the contest and summarizes the ideas that were generated.

Background

The contest was aimed at eliciting new solutions to some of the many challenges that continue to surround SIFI designation. The financial crisis of 2008 brought vastly increased attention by regulators to risk spillovers in the financial sector that could cause systemic problems. As part of addressing those risks, financial regulators have been tasked with identifying Systemically Important Financial Institutions (SIFIs). Financial institutions designated as SIFIs are subject to additional oversight, regulation and costs.

There is not yet a globally agreed-upon definition of a SIFI, although regulators have proposed and are applying a variety of criteria to designate some institutions as systemically risky. Financial entities whose failure or disruption could severely impact the financial system and broader economy are typically considered candidates for SIFI designation. Large banks, insurance companies, exchanges, clearing houses, finance companies and investment funds have all been identified as potentially or actually systemically important.

Other institutions that are likely to be a source of systemic risk and worthy of consideration have received far less attention by regulators. Those include large government financial institutions such as Fannie Mae and Freddie Mac, development banks and sovereign wealth funds.

The lack of a comprehensive, conceptually coherent and globally accepted set of criteria for quantifying the systemic importance of individual institutions – and for designating SIFIs – raises difficulties for financial institutions and regulators alike. The designation comes with significant regulatory costs and administrative burdens for affected institutions. Those costs must be weighed against the potential benefits of increased financial stability. A more transparent designation process that avoids a one-size-fits-all approach would improve fairness and efficacy and make it easier for firms to take preemptive actions to reduce their contributions to systemic risk and thus avoid SIFI designation.

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(More detailed information on current and proposed approaches and criteria for SIFI designation, and on the history and current regulations around the world, was compiled by Ingon Lee of MIT as background for contest participants and can be found [here](#).)

To respond to these challenges, contest participants were asked to address:

- Basic principles and a general framework for judging the systemic importance of an institution;
- Key similarities and differences between that framework and current approaches used to define SIFIs;
- Operationalization of such a framework;
- Whether distinctions between firms of national versus global systemic importance exist;
- Whether the proposed approach provides the flexibility to reverse a SIFI designation if a firm's systemic risk is reduced (for instance, by changes to its business model); and
- The impact such an approach would have on the number of firms designated.

Results

Proposals were received from financial economists, practitioners in the financial services industry, think tank analysts and experts in systemic risk assessment and risk management. The contest generated a range of ideas that included both modeling and indicator approaches and combinations of those two methods. It also elicited a number of suggestions for non-technical conceptual improvements.

As is hoped in conducting a crowd-sourced solicitation, participants suggested very different ways to consider the notion of SIFI designation. A number of common threads connect some of the approaches and provide interesting insights about directions for regulatory improvement:

- *Indicator vs. modeling methods of SIFI designation.* Indicator approaches may be more practical from a regulatory implementation perspective but modeling features should be incorporated to inform and strengthen such methods. Static, one-size-fits-all approaches – while simple to administer – are plagued by an inability to identify firms and institutions that are highly

interconnected or whose failure would cause significant disruption to the system.

- *Size is a blunt and sometimes poor measure.* Leverage, function and transaction types can be more significant than size in determining systemic risk.
- *Quantification of a firm's marginal contribution to overall risk in the financial system.* The measurement of marginal risk and overall interconnectedness of financial institutions is essential for identifying whether a firm could trigger a systemically important event
- *Flexible approaches.* SIFI designation process must be comprehensive in scope, flexible in nature (i.e., firms may be systemically important at times, but not always), readily implementable and perhaps even non-publicly disclosed.
- *Dynamic analysis.* Systematic risk is greatly influenced by economic cycles and business practices and there is a need for dynamic approaches to detect when the system is under stress.
- *Governments as a source of systemic risk.* Government-controlled financial institutions and entities that have access to government borrowing or guarantees require special consideration and perhaps SIFI designation given taxpayer exposure and the magnitude of such activities.

The winning submissions, summarized here, were most notable among the entries in providing insights and measurement approaches worthy of consideration by policymakers and regulators.

- **Sanjiv R. Das** (1st Place) contends that measures of systemic importance should have two key features: they should be quantifiable (i.e., measurable on an on-going basis); and decomposable (i.e., aggregate system-wide risk broken down into specific risk contributions from individual financial entities). Das proposes a system-wide score incorporating both the credit quality of each financial institution and its interconnectedness. Regulators could then use such a score to detect when the financial system is

under stress and use a cut-off level to define as a SIFI any financial institution whose risk contribution exceeds that level. The method can be implemented for publicly traded firms using credit ratings and stock returns. The method is demonstrated by applying it to India. Das was able to back-fill data to 2008 and can now populate fields daily to provide an ongoing real-time series of systemic risk and potentially a real-time systemic risk management tool for regulators.

- **Barbara Novick** (2nd Place) makes the case for why leverage and function are more important criteria than size. Given the potential for over-designation of entities imposing unnecessary economic burdens and less than market-wide regulation creating gaps that remain a source of risk, she contends systemic risk reduction will be achieved if: only the appropriate entities are subject to heightened oversight; and market-wide prudential regulation is applied to products and activities. SIFI designation should be reserved for both financial institutions that exhibit balance sheet fragility and financial market utilities that provide the plumbing to capital markets. Moreover, Novick points out that prudential market regulation should focus on products and activities – regardless of the legal organization or size of the entity involved – using an approach that would look holistically at the market ecosystem. Under such an approach, the total number of entities designated should be relatively small as most systemic risk issues can and should be addressed through system-wide principles rather than entity specific designations.
- **Volker Brühl** (honorable mention) proposes a threefold indicator-based SIFI test along the following dimensions: 1) market relevance; 2) risk potential; and 3) interconnectedness. A financial institution would be categorized as a SIFI when it passes the three tests. Such a threefold test avoids weighting or aggregation of factors to generate an overall score and uses a common set of criteria applicable to all types of financial institutions, even though they need to be adapted to specific industry segments. Large financial institutions (“Top 250”) would have to register and report financial interconnections with any other member of the Top 250 to ensure full transparency and a complete “250 x 250 financial interconnection matrix.”
- **Agostino Capponi and W. Allen Cheng** (honorable mention) outline a resolution-dependent framework that includes two measures of systemic importance: 1) cash obligations during resolution (COR); and 2) operational cash throughput (OCT). High COR or OCT indicates high systemic importance. COR measures the amount of capital a hypothetical resolution authority needs to quarantine the institution's failure from creating losses to other parties by paying the institution's obligations during resolution. OCT measures the amount of financing that is lost due to the unavailability of the institution's functions during the resolution period. Regulators would play a key role in this framework, specifying relevant stressed scenarios and parameters for simulating COR and OCT distributions. While COR and OCT measures are conceptually simple, operationally they may require solutions that can handle compilation of large numbers of transactions and contractual obligations. It would be necessary for regulatory authorities to work together with institutions in developing cost efficient infrastructures that allow for clear regulatory oversight. Since the measures can be frequently updated for SIFI candidates, it is possible that designation could change over time. SIFIs who reduce COR and OCT may lose their designations once the measured systemic importance becomes small relative to peers or some regulatory threshold. Since OCT would tend to be high when an institution has many (potentially offsetting) contractual obligations, the proposed framework introduces an incentive for institutions to reduce the complexity of their obligations. Such an approach could lead to a more transparent financial system.
- **Kathleen W. Hanley** (honorable mention) proposes a framework focusing on the process of SIFI designation and economic justification rather than on a specific definition. She suggests any process for determining designation, including the

criteria used to define a SIFI, should consider the following three questions. What is the fundamental economic problem that the criteria for designation address? Are there alternative regulatory solutions to the problem in addition to designation of specific institutions? What are the costs and benefits of the proposed solution and each of the feasible alternatives? Hanley contends that for the regulatory process to be effective, proposed criteria for designation should address conditions under which financial distress may occur, the likelihood of such conditions being present, the ability of the firm to mitigate the risk and how regulation may reduce the probability of the event occurring. She also points out that the analysis used for regulatory intervention should determine whether designation of a specific institution is the appropriate solution or whether additional regulatory oversight of certain risky activities common to a number of institutions is needed. Finally, she suggests proposed criteria for SIFI status should take into consideration the costs and benefits of designation to the financial institution and to society as a whole.

- **Mark Kritzman and David Turkington** propose several characteristics that would qualify a financial institution as systemically important and introduce a statistical methodology for identifying publicly traded SIFIs. They describe four characteristics for qualifying a financial institution as a SIFI: 1) must be vulnerable to failure or serious disruption; 2) must be connected to other entities in the financial system; 3) entities in the financial system to which the SIFI is connected must also be vulnerable to failure; and 4) characteristics must be especially prevalent during periods of financial fragility. An institution that scores high based on the first three characteristics across all market conditions including those that are resilient, may be less systemically important than one that scores lower on average, but higher during fragile market environments. They envision use of a three-step process to identify SIFIs: 1) measure the instability of asset returns using a metric called financial turbulence; 2) apply an absorption ratio metric to measure the degree of systemic risk in the financial system; and 3) measure the centrality

of potential SIFIs during periods of fragility defined as a particular combination of instability and risk concentration.

- **Alex J. Pollock and Thomas H. Stanton** (honorable mention) suggest that the definition of a SIFI, if it is to capture all the real threats to systemic financial stability, needs to include not only banks and other financial companies but also fully quasi-governmental institutions such as Fannie Mae and Freddie Mac, the Federal Reserve Banks and the Federal Reserve Open Market Committee, and also government credit and insurance programs of any substantial size. For U.S.-based organizations, they propose the following definition: “any organization, including a government agency or instrumentality or private company, where the nature, scope, size, scale, concentration, or interconnectedness of the financial activities of the organization, or its financial distress or insolvency, could pose a threat to the stability of the financial system of the United States.”

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