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How to define a Systemically Important Financial Institution (SIFI) – a new perspective

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How to define a Systemically Important Financial Institution (SIFI) – a new perspective

The recent financial crisis has demonstrated that a failure of Systemically Important Financial Institutions (SIFIs) could seriously damage the stability of the financial system. A precise and consistent definition of a SIFI is pivotal to ensure efficient and effective regulation of the global financial sector. This paper proposes a threefold test logic that allows to classify Financial Institutions as systemically important across the various industry segments.

Volker Brühl[1]

1. Introduction

The recent Financial Crisis has revealed substantial deficiencies in the regulation and supervision of the international Banking Sector. Comprehensive reform packages like Basel III or the Dodd Frank Act in the United States have been established to improve the resilience of the banking sector in general but especially in times of financial or economic distress. Key measures include a substantial increase of capital requirements both in quantitative and qualitative terms and the introduction of internationally harmonised liquidity standards. Furthermore, risk management and governance processes were improved as well as transparency and disclosure of banks were strengthened.[2]

The problem that Financial Institutions could either be "too big to fail" or "too interconnected to fail" has been addressed by the G20 and various international organizations like the Financial Stability Board (FSB), the Basel Committee on Banking Supervision (BCBS), the International Association of Insurance Supervisors (IAIS) or the International Organization of Securities Commissions (IOSCO). Financial Institutions have been characterised as systemically important, if their distress or disorderly failure would cause significant disruption to the financial system and economic activity due to their size, complexity and systemic interconnectedness.[3] A failure of such Systemically Important Financial Institutions (SIFIs) could seriously damage the stability of the financial system due to spillover effects to other Financial Institutions, private and institutional investors as well as the real economy through multiple channels and negative externalities. SIFIs are expected to have higher loss-absorbency capacities and are subject to more intensive supervision and resolution planning in order to reduce moral hazard and to take into account the specific relevance of SIFIs for the global financial stability.

Regulatory practice currently follows indicator-based approaches that are applied to the Banking and Insurance sector to identify Global Systemically Important Banks (G-SIBs) and Global Systemically Important Insurers (G-SIIs). For instance the size of banks, their interconnectedness, the lack of readily available substitutes for services or infrastructures they provide, their global activity and their complexity are indicators used to measure the global systemic importance of banks.[4] The FSB and the Basel Committee on Banking Supervision have published the most recent list of global systemically important banks (G-SIBs) in November 2015 that contains 30 Institutions allocated to five buckets. Each bucket represents the level of systemic importance in a descending order and determines the required level of additional common equity loss absorbency as a percentage of risk-weighted assets that applies to each G-SIB. The additional capital requirements range from 3,5% (Bucket 5) to 1,0% (Bucket 1).[5]

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2 See Basel Basel Committee on Banking Supervision, Basel III: A global regulatory framework for more resilient banks and banking systems, Basel 2011; DODD-FRANK WALL STREET REFORM AND CONSUMER PROTECTION ACT Public Law 111-203, July 2010.

3 See Financial Stability Board (FSB), Reducing the moral hazard posed by systemically important financial institutions, Recommendations and Time Lines, Basel, October 2010.

4 See Basel Committee on Banking Supervision (BCBS), Global systemically important banks: updated assessment methodology and the higher loss absorbency requirement, Basel, July 2013 and Basel Committee on Banking Supervision (BCBS), The G-SIB assessment methodology – score calculation, Basel, November 2014.

5 See Financial Stability Board (FSB), Update of list of global systemically important banks (G-SIBs), Basel, November 2015.

Furthermore, nine insurance groups have been qualified as G-SIIs as of November 2015 that are subject to higher loss absorbency (HLA) requirements and further policy measures.[6] The identification of G-SII rests also on a similar indicator-based approach with the key parameters size, interconnectedness, global activity, asset liquidation and substitutability being measured with insurance specific indicators.[7] Besides, there is a wide range of Financial Institutions outside the Banking and Insurance sector like e.g. Finance Companies, Asset Management Firms (e.g. Hedgefunds) or Market Intermediaries whose failure could equally trigger instability of the financial system. It is particularly challenging to find a common methodology for identifying such Non-Bank Non-Insurer (NBNI) Financial Institutions as globally systemically important as underlying business models, risk profiles and transmission channels are very heterogeneous.[8]

Furthermore, there is a growing number of research publications that deal with financial networks to better understand interconnections between Financial Institutions and their relevance for systemic risk. However, there are still several issues to be solved, e.g. regarding data requirements and empirical testing of underlying model assumptions before they might be used in practice by regulatory authorities.[9] A precise and consistent definition of a SIFI is pivotal to ensure efficient and effective regulation by e.g. quantifying capital surcharges and avoid regulatory arbitrage between different segments of the financial services industry.[10] This paper proposes a threefold test logic that allows to classify Financial Institutions as systemically important independent of the specific industry segment.

2. The proposal

The methodology to identify SIFIs outlined in this proposal is based on the assumption that a SIFI is systemically important, if it has a *global market relevance, a high level of risk potential and a high level of interconnectedness* with other Financial Institutions. As an initial filter for selecting Financial Institutions to be tested a minimum threshold for Total Assets could be applied which implies that Financial Institutions with Total Assets below this limit would be considered too small to have a systemic impact upon failure. If we assume that a Financial Institution has to own or manage at least Total Assets of USD 200 bn, one would approximately select the Top 100 Banks, the Top 50 Insurance Firms and the Top 100 Investment Firms (together the "TOP 250") whereby some of the largest financial conglomerates would fall in all three buckets.[11]

2.1 A threefold "SIFI Test"

Consequently, this paper proposes a threefold indicator based "SIFI test" along the three dimensions outlined above, *a Market Relevance-Test, a Risk Potential-Test and an Interconnectedness-Test.* Based on this logic, a Financial Institution is categorized as a SIFI, if and when it passes the SIFI test in all three dimensions (see Figure 1). The test should be updated on a regular basis.

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[6] See Financial Stability Board (FSB), Update of list of global systemically important insurers (G-SIIs), Basel, November 2015

[7] See International Association of Insurance Supervisors (IAIS), Global Systemically Important Insurers: Initial Assessment Methodology, Basel, July 2013 and International Association of Insurance Supervisors (IAIS), Global Systemically Important Insurers: Updated Assessment Methodology, Basel, June 2016

[8] A preliminary assessment methodology has been presented by the Financial Stability Board and the International Organization of Securities Commissions. FSB/IOSCO, Assessment Methodologies for Identifying Non-Bank Non-Insurer Global Systemically Important Financial Institutions - Proposed High-Level Framework and Specific Methodologies, Madrid/Basel, March 2015 or Financial Stability Board (FSB 2013), Progress and Next Steps Towards Ending "Too-Big-To-Fail" (TBTF) Report of the Financial Stability Board to the G-20, Basel, September 2013

[9] For a literature survey see e.g. Hüser, A. (2015), Too Interconnected to Fail: A Survey of the Interbank Networks Literature, SAFE Working Paper No. 91

[10] See e.g. Board of Governors of the Federal Reserve System, Calibrating the GSIB Surcharge, Washington, July 2015 or regarding the forthcoming TLAC (total loss-absorbing capacity) see Basel Committee on Banking Supervision, TLAC Quantitative Impact Study Report November 2015; Financial Stability Board (2015), 'Principles of loss-absorbing and recapitalisation capacity of G-SIBs in resolution', Basel 2015

[11] This rough estimate refers to the global ranking of Financial Institutions in each segment, see e.g. SNL Financial Database (2015).

Figure 1: SIFI Test - Overview
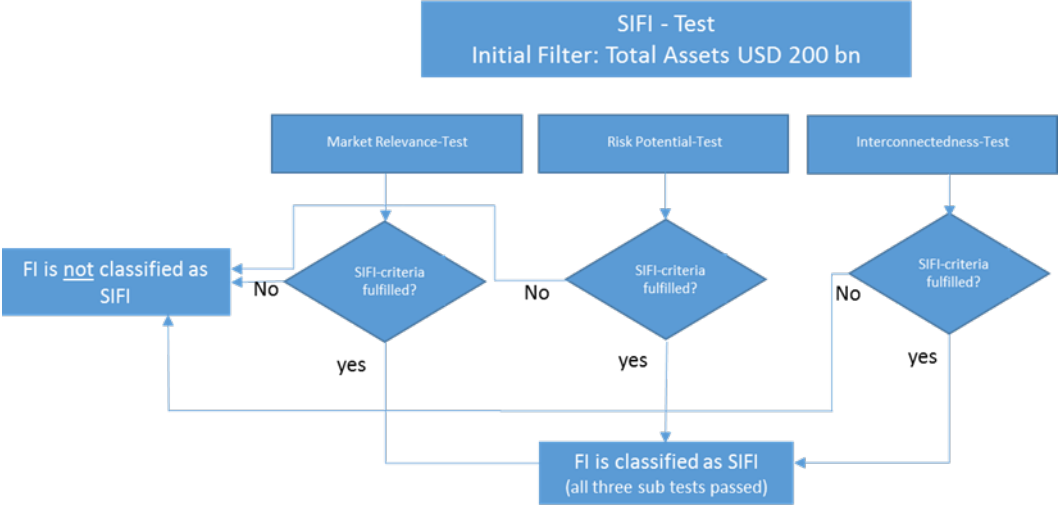
2.2 Market Relevance - Test

The rationale behind the first test is that a SIFI is supposed to have global market relevance and therefore a leading position in most of its core markets. Depending on the business model and product offering global market relevance could be either reflected by leading positions in global markets (e.g. Investment Banking) or in multiple local markets provided that the geographic footprint covers all major economic regions (Americas, EMEA, APAC). If this is the case, the conclusion that a failure would significantly affect a large customer base appears to be reasonable.

To conduct the market relevance test, market shares in each core market of the respective Financial Institution have to be measured. Figure 2 illustrates a possible segmentation for Banking, Insurance and NBNI (here represented by Asset Management[12]), whereby the respective market shares should be calculated for different regional markets where appropriate (e.g. in retail banking) or on a global basis (e.g. capital markets businesses like Equities, Rates and FICC[13]).

Figure 2: Segmentation of the Market Relevance Test (example)

Industry Segment	Market Segment	Product Line	Market Share
Banking	Retail	Loans, Deposits	Regional (e.g. Americas, EMEA, APAC)
Banking	Corporates	Loans, Deposits, Derivatives	Regional (e.g. Americas, EMEA, APAC)
Banking	Investment Banking	Rates, FICC, Equities	Global Market Share
Insurance	Life Insurance		Regional (e.g. Americas, EMEA, APAC)
Insurance	Non-life Insurance		Regional (e.g. Americas, EMEA, APAC)
Insurance	Reinsurance		Global
NBNI	Investments	Asset Mangement	Global

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[12] A further segmentation of NBNI (e.g. including Finance Companies) appears reasonable.
[13] FICC = Fixed Income, Currencies, Commodities

The test examines whether a potential SIFI has a market share above a certain "critical market share" in its defined market segments. The calibration of the respective *critical market share* should be subject to a detailed market concentration analysis per product line and region using e.g. a Lorenz Curve. For each market segment the cumulative market share of the Top 25%[14] with the largest market shares is calculated. The critical market share would be the marginal market share attributable to the smallest Financial Institution within the Top 25%. The respective Financial Institution would be classified as SIFI (subject to the outcome of the other two tests), if the test reveals that the market shares are equal or above the respective critical market share for either at least one product line in all major economic regions (for regional markets) or at least one global market. For instance a market leading Retail Bank that conducts business only in one core economic region, e.g. the Americas, would not be qualified as SIFI due to the lack of global market relevance. Conversely an Investment Bank with a market leading position in at least one global product line (e.g. Equities or Fixed Income Sales and Trading) would pass the Market Relevance-Test.

2.3 Risk Potential - Test

The rationale behind the second test is that the level of riskiness of the entire business activities of a SIFI has to be so high that it constitutes a substantial part of the overall risk potential associated with the worldwide largest Financial Institutions (e.g. the "Top 250"). The risk categories that are considered are Market Risk, Credit Risk, Operational Risk, Liquidity Risk and Insurance Risk. A reasonable estimate for an aggregate risk figure could be derived from an Economic Capital (EC) Model that Banks have to implement according to Basel III. In the United States large Banks also deploy Economic Capital models, although the results are not published in detail. Usually Economic Capital models are based on Monte Carlo simulations with a Value at Risk (VaR) methodology that aggregates the individual risk categories taking into account diversification effects. Economic Capital models estimate the economic loss defined as the unexpected loss for a 12 month period that is not exceeded with a confidence level of at least 99%. Due to the shortcomings of the VaR approach to cover tail risks, it might be reasonable to consider an Expected Shortfall approach to calculate the Economic Capital.[15] Also Insurance groups use the EC approach widely as a key tool for managing capital adequacy according to the "Own Risk and Solvency Assessment (ORSA)" as part of the Solvency II Directive (Directive 2009/138/EC) in the EU or the "Risk Management and Own Risk and Solvency Assessment Model Act (#505)" in the United States.

However, Non-Bank Non-Insurance Financial Institutions like e.g. asset management firms are not yet obliged to implement Economic Capital Models. Similar to the market assessment test, global risk concentration is analysed by applying the Economic Capital concept to the "Top 250" Financial Institutions and calculating the cumulative risk share of the Top 25% with the largest risk potential as indicated by the Economic Capital. The "critical risk share" would be the marginal risk share attributable to the smallest Financial Institution within the Top 25%. If the test reveals that the risk share is equal or above the critical risk share, the respective Financial Institution would be classified as SIFI subject to the outcome of the two other tests.

2.3 Interconnectedness - Test

The rationale behind the third test is that the failure of a SIFI due to its size and interconnectedness could trigger defaults of other Financial Institutions and/or substantial losses for its shareholders or institutional and private debt holders to an extent that trust into the stability of the global financial

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[14] The 25% threshold is exemplary and should be calibrated depending on market concentration. Furthermore, it could make sense to set a minimum figure of e.g. 5% for the calculated critical market share to take into account highly fragmented markets.
[15] see Basel Committee on Banking Supervision, Fundamental review of the trading book: A revised market risk framework, Basel, October 2013 or Basel Committee on Banking Supervision, Fundamental review of the trading book: outstanding issues, Basel, February 2015.

system is endangered and as a consequence could lead to disruptions in the global financial markets. A simplified approach to measure the level of interconnectedness is based on a matrix that quantifies the bilateral financial relationships among the "Top 250" Financial Institutions.

In Figure 3 each element in the matrix Exp_{ij} represents the financial exposure of Financial Institution i (FI_i) versus Financial Institution j (FI_j) in % of the total financial exposure whereby the financial exposure is defined as the sum of loans, equity positions and the market value of derivative contracts between the respective institutions. The sum of each column shows the net liability position (NLP_j) of FI_j (in %) versus all other FIs in the "Top 250" while the sum of each row reflects the Net Receivable Position (NRP_i) of FI_i (in %) versus all other FIs. The sum of all columns and rows is 100%. A Financial Institution is considered as SIFI, if the net receivables and/or net liabilities position exceeds a critical threshold, which could again be calibrated for the Top 25 % Financial Institutions with the strongest financial interconnections.

Figure 3: Financial interconnectedness Matrix

„Interconnectedness – Test"					
Financial Inst.(FI)	FI_1	FI_2	FI_3	FI_n	Σ
FI_1	$Exp_{11}=0$	Exp_{12}	Exp_{13}	Exp_{1n}	NRP_1
FI_2	Exp_{21}	$Exp_{22}=0$	Exp_{23}	Exp_{2n}	NRP_2
FI_3	Exp_{31}	Exp_{32}	$Exp_{33}=0$	Exp_{3n}	NRP_3
FI_n	Exp_{n1}	Exp_{n2}	Exp_{n3}	$Exp_{nn}=0$	NRP_n
Σ	NLP_1	NLP_2	NLP_3	NLP_n	100%

FI_i= Financial Insitution i
Exp_{ij} = Risk Positon of FI_i to FI_j (Loans, Equity Positions and Derivative Contracts)
NRP_i = Net Receivables Position of FI_i (cumulative receivables position to other FIs)
NLP_j = Net Liability Position of FI_j (cumulative liabilities position to other FIs)

3. Conclusion

The proposal has certain similarities with the indicator based approach developed by the BCBS. However, a threefold test avoids any weighting or aggregation of factors to generate an overall score. Besides, this proposal uses a common set of criteria applicable to all types of Financial Institutions, even though they need to be adapted to the specific industry segment. On the other hand, regulatory authorities would have to ensure that not only Banks and Insurance Companies but also Non-Bank Non-Insurer Financial Institutions are obliged to establish Economic Capital models that are consistent in terms of methodology and data requirements. Furthermore, each Financial Institution within the "Top 250" would have to register and report all financial interconnections with any other member of the "Top 250" to ensure full transparency and a complete "250 x 250 financial interconnection matrix". Especially such a "financial interconnectedness matrix" would help to significantly increase transparency about mutual dependencies and financial relations among the largest Financial Institutions across the various industry segments and could also be a helpful element within an early warning system to detect systemic risk. Subject to a thorough data analysis it appears likely that a number of Financial Institutions currently in Bucket 1 of the G-SIB list would not be SIFIs according to this proposal. On the other hand especially some NBNIs like Blackrock or the Vanguard Group would most likely be classified as SIFI.

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