

# Global Systemically Important Banks: Do They Still Pose Risks for Financial Stability?<sup>1</sup>

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## Abstract

*The global financial crisis of 2007–09, followed by sweeping overhaul of international banking regulation, urged financial regulators to apply a tailored supervisory regime to global systemically important banks (G-SIBs). This approach was caused by exacerbation of the G-SIBs' systemic risks and their transmission during macro level instability. The size of G-SIBs, the extent of their market power, and the heterogeneity of their operating models resulted in their dual role in systemic stress: being a source of systemic risks for the macro level, G-SIBs are at the same time transmitters of crisis developments to the micro level, hence increasing their own exposure to risks.*

*Under these circumstances, the objectives of global gross domestic product (GDP) growth required a revision of regulatory priorities by shifting them from G-SIBs' profitability to G-SIBs' stress resilience through the application to them of more stringent capital adequacy standards and liquidity requirements, which ultimately contributed to G-SIBs' insusceptibility to external shocks. At the same time, the G-SIBs' role in exacerbation of systemic stress remains uncertain due to the unresolved issues of the G-SIBs' systemic importance. Given the high level of their interconnectedness in the international financial area, dysfunction of G-SIBs can provoke a domino effect of insolvency and bankruptcies in the international banking sector.*

*Based on 2011–21 statistics for all G-SIBs included in the annual lists of the Financial Stability Board (FSB), we found a certain decline in G-SIBs' systemic risks, which is attributable to further strengthening of their market discipline. This proves that international regulatory policy is on the right track. We also found that the stress resilience of G-SIBs, a product of the application of Basel III capital buffers and the total loss-absorbing capacity (TLAC) standard, significantly contributed to financial stability at a level sufficient not only for the integrity of G-SIBs' performance during the COVID-19 pandemic, but also for minimization of the risk of collapse of the banking systems that prevented the transformation of the related shocks and instability into an economy-wide crisis. Nevertheless, the post-crisis regulatory reform failed to contain the systemic importance of G-SIBs, mostly due to the lack of supervisory tools and techniques in reduction of the negative effects of the G-SIBs' international interconnectedness.*

**Keywords:** Global systemically important bank (G-SIB), COVID-19 pandemic, Basel III, TLAC, stress resilience, systemic importance, systemic risks, financial stability.

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The global financial crisis of 2007–09 (GFC) overturned the primacy of market-principles-based regulation of the financial sector. The post-crisis fundamental reform of banking regulation (known as Basel III) laid the ground for more rigorous supervision of credit institutions. Special attention was given to the large, internationally active banks: although their performance, like performance of any other financial institutions (*ceteris paribus*), depends on the macro level parameters and the dynamics of global financial markets, their activities, unlike other banks, have an opposite effect on the dynamics of the macro level and financial markets, which is attributed to their size as well as activity in key segments of the global capital markets.

Against the backdrop of the fragility of the post-crisis recovery and external shocks that continue to pose threats to financial stability, the issues of stress resilience of international financial institutions were brought to the core of the regulatory policy; this becomes especially important for institutions that belong to the category of global systemically important banks (G-SIBs<sup>2</sup>).<sup>3</sup> In the framework of the post-crisis regulatory paradigm, stress resilience is understood as the ability of banks to efficiently and promptly deliver their financial intermediary function through the absorption of losses (that is, immobilization of the external shocks without detriment to their core activities) incurred due to macro level turbulence and crisis developments which, in turn, results in the minimization of systemic risks. In this regard, the extent of stress resilience of the G-SIBs would ensure that the banking sector is not susceptible to macro level imbalances and, as such, would contribute to minimization of the likelihood of new crises.

At the same time, systemic risks in the banking sector remain one of the main drivers of financial crises, mainly due to the G-SIBs' economies of scope and scale. In this article, we attempt to determine the extent to which international banking regulation reform has reduced the level of systemic risks and improved the stress resilience of the G-SIBs, as well as to find whether the systemic importance of the G-SIBs still challenges financial stability. Additionally, we evaluate the role of the post-crisis regulatory order in overcoming the aftermath of the COVID-19 pandemic.

## The Global Banking Sector in the Context of the COVID-19 Pandemic

The crisis provoked by the COVID-19 pandemic significantly downplayed the global economy, including the banking sector. Unable to fully recover from the GFC, the international financial area found itself in the grip of principally different risks associated with both the unexpectedness of a new crisis and the unpredictability of its extent, depth, duration, and consequences. The volatility of global financial markets during the COVID-19 pandemic was eight times higher than their volatility during the GFC [Gunay, 2021]. The idiosyncrasy of the situation was also characterized by the fact that banks swiftly lost their potential gained during the post-crisis recovery (Table 1), mainly due to the lack of ready-made solutions for adapting their operating models to the non-economic aspects of the crisis. Thus, in 2020, banks' loan losses in 88 countries amounted to \$892 billion, which is 64% higher than loan losses in 2019 [S&P Global Ratings, 2021].

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<sup>2</sup> Also known as “too-big-to-fail” banks.

<sup>3</sup> For the purposes of this article, the terms “international bank” and “global systemically important bank” have the same meaning, unless otherwise stated by the authors.

Table 1. Fitch Ratings Forecast for Banks in 2015–21

Forecast	End of the Period (in %)						
	2015	2016	2017	2018	2019	2020	2021
Stable	75.6	71.4	79.8	78.5	80.1	39.6	80
Negative	14.8	21.4	10.7	13.1	12.6	57.8	13.3
Positive	6.2	4.4	7.6	7.0	5.1	0.6	7.0
Evolving	3.4	2.8	1.9	1.4	2.2	2.0	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: [Fitch Ratings, 2021].

At the same time, instability in the banking sector was replaced by an equally unexpected and rapid recovery in the same year, as evidenced by market capitalization (Table 2) and operational parameters (Table 3) of the leading international banks. Moreover, it is expected that the loan losses in 2020–21 will not reach \$2.1 trillion, as experts had predicted in July 2020, but will amount to less than \$1.8 trillion [S&P Global Ratings, 2021], and in 2022 loan losses will further drop to \$585 billion [S&P Global Ratings, 2022]. Banking sector optimism in post-COVID-19 recovery is also driven by forecasts on the key performance indicators of the banking sectors: for example, in the United States, the volume of non-performing loans (NPL) may amount to nearly \$254 billion in 2020–22, or 2.5% of the total volume of loans, which is 4.1 percentage points lower than during the GFC, and the return on equity of US banks is expected to recover to pre-crisis levels by the end of 2021 [Deloitte, 2021].<sup>4</sup>

Table 2. Market Capitalization of the G-SIBs in 2020–21 (\$ Billion)

Name of G-SIB	As of:					
	01.01.2020	01.04.2020	01.07.2020	01.10.2020	01.01.2021	01.01.2022
JPMorgan Chase	429.9	274.3	282.3	293.4	387.3	494.0
HSBC	160.2	114.4	98.8	79.0	105.5	132.9
Citigroup	168.9	87.7	105.2	89.8	128.4	130.5
Deutsche Bank	16.0	13.6	19.4	17.4	22.7	29.5
BNP Paribas	73.8	37.9	49.7	45.4	66.2	84.9
Barclays	40.8	20.2	25.5	21.8	34.7	47.5
Bank of America	311.2	184.2	202.1	208.7	259.8	402.5
Credit Suisse	33.0	20.0	25.1	24.5	31.6	24.4
Morgan Stanley	81.5	53.6	75.3	76.2	124.0	186.7

<sup>4</sup> Here and onward, the statistical data is available as of the date of submission of the article to the editorial office.

Name of G-SIB	As of:					
	01.01.2020	01.04.2020	01.07.2020	01.10.2020	01.01.2021	01.01.2022
Goldman Sachs	79.9	53.2	67.9	69.2	90.7	132.6
Mitsubishi UFJ	70.0	48.0	50.5	50.6	56.8	79.3
Société Générale Group	28.8	14.2	14.4	10.6	15.8	31.2
Group Crédit Agricole	41.8	21.3	28.4	25.3	37.0	43
UBS	45.6	33.8	42.0	40.2	51.2	66.7
Santander	69.4	40.6	42.7	31.2	54.0	61.1
Bank of China	201.3	183.9	181.5	124.7	131.2	131.0
Industrial and Commercial Bank of China	432.5	376.7	350.0	237.2	259.7	252.6
Wells Fargo	222.4	117.6	103.9	96.9	124.8	218.4
Mizuho FG	39.2	29.0	31.4	31.5	32.0	32.3
Bank of New York Mellon	45.3	29.8	33.6	30.4	37.6	51.5
UniCredit	32.1	17.7	20.4	17.4	18.9	33.9
State Street	28.3	18.8	22.4	20.9	25.7	37.2
ING Group	46.7	20.6	28.3	27.7	36.7	56.2
Sumitomo Mitsui FG	50.8	33.2	38.9	37.8	42.5	47.2
Groupe BPCE	13.8	10.3	8.1	6.7	9.7	15.1
Standard Chartered	30.0	18.5	18.3	14.8	19.4	20.3
Agricultural Bank of China	181.9	163.6	165.0	157.8	164.7	157.9
China Construction Bank	217.7	205.1	203.0	164.4	191.9	175.4
Royal Bank of Canada	112.5	87.5	97.1	99.3	116.7	159.8
Toronto Dominion	101.1	76.3	80.4	83.5	102.4	144.3
<i>Total</i>	<i>3,406.4</i>	<i>2,405.6</i>	<i>2,511.6</i>	<i>2,234.3</i>	<i>2,779.6</i>	<i>3,479.9</i>

*Note.* Market capitalization as of 1 April, 1 July, and 1 October 2020, and 1 January 2021 reflects the performance of the G-SIBs during the COVID-19 pandemic.

*Source:* [CompaniesMarketCap, 2021].

*Table 3. Loan Loss Provisions in 2020 (\$ Billion)*

Country/Region	Quarter 1	Quarter 2	Quarter 3
Top 100 banks in North America (excluding U.S.)	50.1	64.2	16.7
Top 100 U.S. banks	29.8	32.7	9.7
Top 100 EU banks	33.6	35.2	20.6
Top 100 Asia-Pacific banks	47.7	55.7	11.8

*Source:* [Deloitte, 2020].

In this regard, the following questions arise:

- Is the resilience to the shock associated with the COVID-19 pandemic followed by the rapid recovery in the banking sector the result of the transition to Basel III and strengthening the stress resilience of the G-SIBs?
- To what extent are banking regulators' efforts in reduction of the G-SIBs' risks consistent with regulatory objectives of minimization of systemic risks?
- Do the specifics of activity and systemic importance of G-SIBs prevent financial stability?

## Dismantling Deregulation, Systemic Risks, and Basel III

Deregulation of banking activities amid financial globalization in the 1990s–2000s and expansion of international banks has increased the level of systemic risks [Ioannou, Wójcik, Dymski, 2019] and boosted their transmission channels [Ayhan Kose, Prasad, Terrones, 2009; Straetmans, Chaudhry, 2015]. In the absence of an anti-crisis stabilization mechanism in the international regulatory policy, the GFC extended beyond the banking sector. It became clear that in order to overcome crisis, the banking sector would require a principally different framework of banking regulation, which would be based on a more solid capital base of banks and a mechanism for mitigation of systemic risks in the banking sector. To this end, international regulators, including the Basel Committee on Banking Supervision (BCBS) and the Financial Stability Board (FSB), developed a new regulatory order that dismantled financial deregulation and established an algorithm to increase the stress resilience of banks together with a procedure for resolution of their insolvency, while financial stability has become the core of the regulatory policy. In other words, the post-crisis regulatory model was supposed to form the insusceptibility of the G-SIBs to crisis developments that would reduce systemic risks and systemic stress. These measures were to restore the role of the banking sector as a driving force for economic growth. The success in achieving the reform objectives depended on the following tasks:

- Strengthening the stress resilience of G-SIBs by raising the levels of their minimum capital adequacy and liquidity;
- Reducing the level of systemic stress in the banking sector<sup>5</sup> by minimizing the risk of G-SIBs' insolvency;
- Ensuring financial stability based on the fulfilment of the two previous tasks.

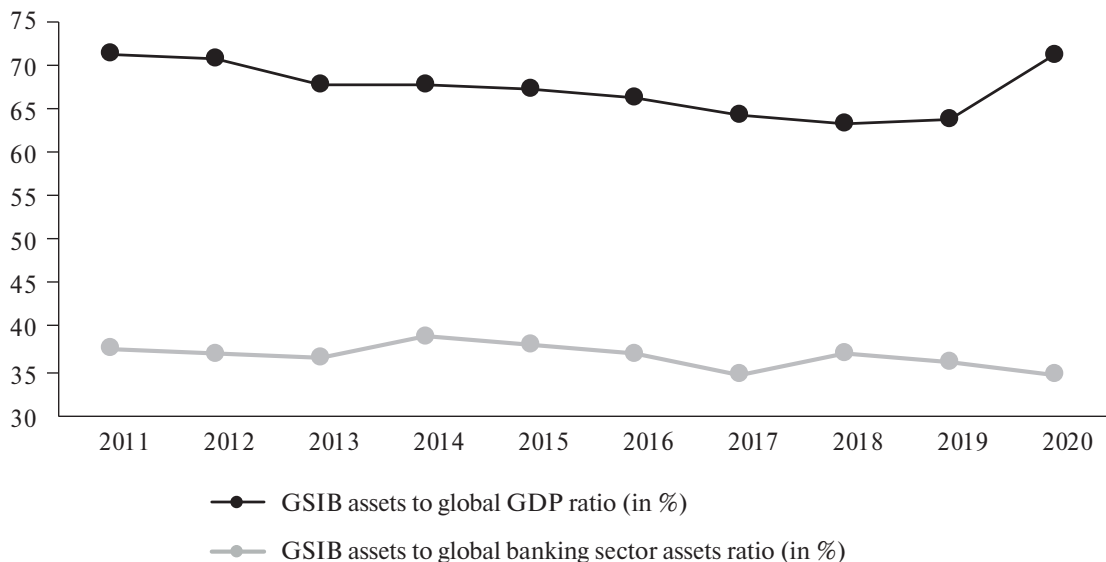
<sup>5</sup> It should be noted that along with Basel III the tasks of reduction of systemic stress in the banking sector are also assigned to macroprudential regulation, which is not addressed in this article since it is the subject of a separate study.

Since the GFC originated in the banking sector and G-SIBs are key market makers in financial markets, regulators highlighted the issues of their solvency, since during periods of macro level instability they become the main source of systemic risks [Borri, di Giorgio, 2021], the main transmitters of systemic risks [Andrieş et al., 2022] and, ultimately, an obstacle to global economic development [FSB, 2013]. Due to these circumstances, the priorities in their regulation were revised: instead of focusing on their profitability, priority was given to their stress resilience which, in turn, should have paved the way to minimization of systemic stress and to achieving financial stability.

## G-SIBs in the Context of the Post-Crisis Regulatory Paradigm

### *G-SIBs as Determinants of the Macro Level Dynamics*

The activities of the G-SIBs affect the dynamics not only of the banking sector and the financial system, but also the economy at large [Lorenc, Zhang, 2020]. This is explained by the impressive volume of their assets, which amounted to 36.1% of the global banking sector assets and 63.7% of the global gross domestic product (GDP) in 2019 (Fig. 1). It is also important to note their dominant positions in a number of national banking sectors (Fig. 2).



*Fig. 1.* The Share of G-SIBs' Assets in the Assets of the Global Banking Sector and in the Volume of Global GDP in 2011–20

*Source:* [Macrotrends, 2021; Statista, 2021].

On the one hand, the global strategic effect of the G-SIBs is determined by their size and extent of activity in the global financial markets and, on the other, by their role as the main transmitters of external shocks to the banking sector [Silva, Pino, 2021] and the non-financial area [Aysun, 2016]. This dichotomy is stipulated by the higher level of diversification of their assets, which expands additional opportunities for them to extend high-risk operations. The

larger the G-SIB, the more powerful its impact on macro level dynamics. Thus, the negative impact on GDP due to the shaky financial position of international banks that are in the top 0.15% of banks in terms of assets, is two times higher than the same effect from banks that are in the top 0.75% and three times greater than the impact of banks that are in the top 1% [Lorenc, Zhang, 2020]. Further, the G-SIBs' market share mirrors the sentiment of investors and other stakeholders, since G-SIBs demonstrate the ability to squeeze a relatively high rate of return compared to smaller banks, regardless of external factors [Feng, Zhang, 2012]. It should also be noted that during instability, G-SIBs remain the main creditors of the economy, while banks of other calibre are urged to redistribute their assets toward non-interest income [Tran, Hoang, Nguyen, 2020], thereby increasing the costs of adapting their operating models to the changed economic conditions.

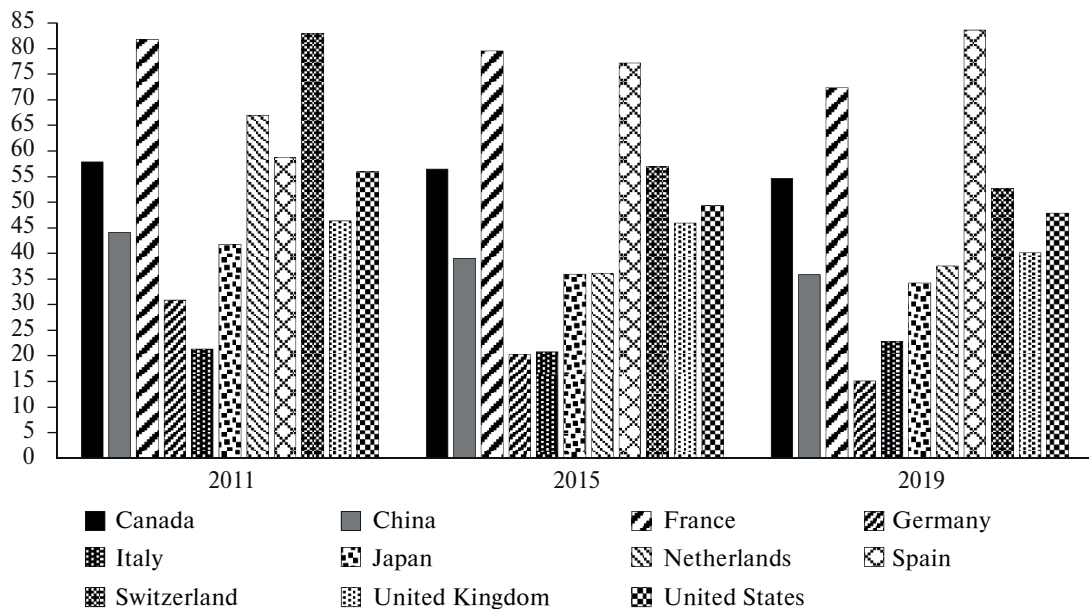


Fig. 2. G-SIBs' Assets in the National Banking Sector Assets in 2011, 2015, and 2019

Source: [Statista, 2021].

### **G-SIBs as a Source of Systemic Risks**

The activities of the G-SIBs are associated with systemic risks<sup>6</sup> [Gulamhussen, Pinheiro, Pozzolo, 2014], and their exacerbation during macro level instability may diminish the efforts of the Group of 20 (G20) and international financial regulators to achieve financial stability [Schuknecht, Siegerink, 2020]. At the same time, the G-SIBs' stress resilience is partially diluted by the specifics of unconventional monetary policy [Rubio, Yao, 2020] in that low and negative interest rates of central banks prevent a return to pre-crisis profitability in the banking sector, while a relatively low rate of return, although being sufficient for maintaining capital

<sup>6</sup> Systemic risks are defined as the probability of transmission of banking sector risks to the macro level. Financial globalization is a catalyst for systemic risks per se, which could be further transformed into global financial and economic crises.

adequacy at an acceptable level, nevertheless, restrains the development of the banking sector due to a shortage of liquidity.

Another factor of systemic stress is the interconnectedness of G-SIBs: once turned dysfunctional, they can cause a chain reaction of insolvency of banks that deal with them. At the same time, the interconnectedness effect is further amplified by the crisis development dilemma: on the one hand, G-SIBs are exposed to crises [Shahzad, Hoang, Arreola-Hernandez, 2019] and, on the other hand, they are a source and transmitters of systemic risks [Borri, di Giorgio, 2021]. Often, these two aspects appear simultaneously, which logically suggests the liquidity dilemma: the function of the G-SIBs as the main creditor of the economy conflicts with their efforts to remain regulatory compliant. What is more, the higher the level of interconnectedness, the higher the degree of the threat to financial stability caused by the G-SIBs [Bostandzic, Weiß, 2018] across all types of risks—macro level, market, and micro level [Mohanty et al., 2018]. Despite the efforts of international financial regulators, the level of interconnectedness of the G-SIBs in the post-crisis period not only did not decrease, but even increased according to the main regulatory criteria (Table 4).

*Table 4. Measures of G-SIBs' Interconnectedness in 2013–20 (as per BCBS Methodology) (at the end of the year, € Billion)*

<b>Criteria of G-SIBs' interconnectedness</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
Intra-financial system assets	7,718.0	7,868.6	8,098.6	7,834.2	6,936.0	7,317.6	7,754.8	7,762.5
Intra-financial system liabilities	7,830.9	8,867.9	8,898.5	8,847.4	8,113.1	8,230.1	8,675.4	9,047.8
Securities outstanding	10,836.2	12,214.4	12,499.3	13,337.1	13,510.4	13,083.7	14,694.1	13,340.0

*Source:* [BIS, 2022].

Sustainability in the banking sector is a central point in the minimization of the possibility of crises and, therefore, the regulatory measures ensuring G-SIBs' market discipline are, in fact, the only approach for a consistent anti-crisis framework in the financial sector. In this regard, the earlier proposed and later implemented steps to ease the regulatory regime, which allegedly appear necessary to boost economic growth, expand the availability of banking services, and reduce banking sector costs, seem not to stand up to scrutiny.<sup>7</sup> It is noteworthy to underscore that attempts to move toward deregulation 2.0 appear against the backdrop of convincing arguments by a number of researchers that easing the supervisory policy inevitably exacerbates systemic risks [Davydov, Vähämaa, Yasar, 2021; Zhang et al., 2021], which at one time became the main cause of the GFC.

### ***G-SIBs as a Focus of Heightened Regulatory Rigor***

After the GFC, stress resilience of the G-SIBs is ensured by a specific oversight regime; however, the academic and expert community still lacks consensus about the possible con-

<sup>7</sup> For example, the easing of the regulatory regime is provided by the Economic Growth, Regulatory Relief, and Consumer Protection Act of 2018 (Public Law 115–174, 115 USC; <https://www.govinfo.gov/content/pkg/PLAW-115publ174/pdf/PLAW-115publ174.pdf>).



sequences of the applied regime for the global economy. One group of authors advocate the regulatory easing approach for the G-SIBs, including possibility of bail-out by the government in case of their insolvency. Their opinion is substantiated by the fact that the rigor of post-crisis regulation can not only impede “de-riskization” of G-SIBs [Ayadi et al., 2016] but also diminish their activity as a main creditor to the economy [Poledna, Bochmann, Thurner, 2017], due to which the costs of the crisis mitigation measures may exceed the benefits of the post-crisis recovery [Gunay, 2021; Welfens, 2008]. The other group of authors believes that the regulatory easing approach may scale up instability in the financial sector in case of exacerbation of systemic risks and suggests not only that the G-SIBs should receive more tightened regulation [Poledna, Bochmann, Thurner, 2017] but also their foreign subsidiaries [Kupiec, 2016], not ruling out even the bankruptcy of the G-SIBs [Schuknecht, Siegerink, 2020] in case of shortage of the bail-out funds.

The risks of dysfunction of G-SIBs that could be the principal and immediate contributor to systemic stress have become the main fears that prompted international financial regulators to resolve the crisis development and the liquidity dilemmas through the prism of three main objectives:

- Reduction of the level of the G-SIBs’ systemic importance as the main factor of the reduction of systemic risks;
- Reduction of the risk of the G-SIBs’ insolvency by strengthening their ability to absorb losses;
- Reduction of the probability of the G-SIBs’ default/bankruptcy by improving the mechanism for resolution of their insolvency [BCBS, 2021a].

It should be noted that the reduction of the G-SIBs’ insolvency and bankruptcy risks largely depends on whether and the extent to which a decrease in the level of their systemic importance affects their stress resilience. To this purpose, the BCBS and the FSB proposed five quantitative criteria for identification of a credit institution as a G-SIB (size, the extent of international activity, interconnectedness, substitutability, and complexity of the operating model), based on which banking regulation was complemented by the instruments aiming not only to scrutinize supervision of the G-SIBs but also to “contain” and reduce the level of their systemic importance. Introduction of the additional regulatory standards contributed to a more efficient mechanism of risk identification, which in the context of risk mitigation policy has become one of the main factors of stress resilience in the banking sector.

### ***Stress Resilience of the G-SIBs as an Outcome of the Post-Crisis Regulatory Order***

#### *Basel III and Effectiveness of the Regulatory Reform*

As main priorities of Basel III were completely introduced by 2019, the objectives of higher stress resilience of the G-SIBs were largely achieved. The evidence of stress resilience includes the following:

- Reduction of G-SIBs’ risk of insolvency<sup>8</sup> due to a higher level of minimum capital adequacy ratio compared to non-systemic banks;
- Reduction of G-SIBs’ liquidity risk due to requirements for stable funding from external sources;
- Reduction of dependence on interbank deposits as a source of G-SIBs’ assets;

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<sup>8</sup> The insolvency of a credit institution is understood as a decrease in its market capitalization by more than 50% and/or a decrease in its credit rating below an investment grade (see, for example: T. Goel, U. Le-wrick, and A. Mathur [2019]).

- Decrease in the volume of securities held on G-SIBs' balance sheet;
- Reduction of the dependence of G-SIBs' lending capacity on the rigour of supervisory standards;
- Lower compliance costs due to income diversification;
- Reduction of the costs associated with adaptation of G-SIBs' operating models to the post-crisis regulatory mechanism due to optimization of their balance sheet structure [Behn et al., 2016; FSB, 2021a; Goel, Lewrick, Mathur, 2019; Martynova, Vogel, 2022].

At the same time, the objective to reduce G-SIBs' systemic importance was not achieved: out of 12 indicators belonging to criteria of systemic importance, the G-SIBs became less active in financial derivatives only [BIS, 2022]. In fact, risks associated with performance of G-SIBs increased in the mid-2010s [Bostandzic, Weiß, 2018; Mohanty et al., 2018]; subsequent analysis showed that the delay of the Basel III's response for the G-SIBs sophisticated balance sheet structure was mainly due to the limited consistency of the regulatory reform, which at the time relied upon primarily traditional supervisory standards, including a capital surcharge for systemic importance (Table 5) rather than on other critical aspects of G-SIBs' performance, including their ability to absorb losses without detriment to their function of financial intermediation. The simplified approach in regulation escalated competition among the G-SIBs in the segment of higher-risk deals [Davis, Karim, Noel, 2020] that led to a decrease in the average capital adequacy level for all G-SIBs in 2016 and, ultimately, to higher level of systemic risks (Tables 5 and 6).

Despite the efforts of the G20, the FSB, and the BCBS to reduce the level of systemic importance in the international banking area, the total number of G-SIBs in the post-crisis period increased from 27 in 2012 to 30 in 2021. In the meantime, more rigorous international supervision over G-SIBs' activity facilitated the transition of four G-SIBs to the category of banks with a lower level of systemic importance (HSBC, Citigroup, Deutsche Bank, and Barclays) while three banks were even removed from the FSB list (Royal Bank of Scotland, Nordea, and BBVA). Nevertheless, in the post-crisis period, Chinese G-SIBs demonstrated a significant increase of their systemic importance and systemic risks, in contrast to the rest of the G-SIBs, where the opposite trend is observed. This largely happened due to the leading role of Chinese banks as key creditors in the global economy, on the one hand, and the relatively high level of non-performing assets on their balance sheets, on the other hand [Avkiran, Mi, 2017]. Mirroring the growth of the Chinese economy, which, in turn, depends on bank loans rather than on raising liquidity from international capital markets [S&P Global Ratings, 2022], as well as on the process of internationalization of the Chinese national currency (yuan (RMB)), the expansion of the global activities of the Chinese G-SIBs fuelled by the lower quality of their assets exacerbates their systemic risks. Taking into account that over the recent years Chinese G-SIBs appeared in the first lines in the list of the top world banks in terms of assets,<sup>9</sup> a (negative) change in the level of their risks will have an immediate effect on international financial stability.

<sup>9</sup> As of 1 January 2022, the total assets of Chinese G-SIBs (four banks) amounted to \$19.1 trillion. For comparison: the total assets of U.S. G-SIBs (eight banks) is \$14.6 trillion, the G-SIBs of the Eurozone (eight banks)—\$14.4 trillion, U.K. G-SIBs (three banks)—\$5.7 trillion, Swiss G-SIBs (two banks)—\$1.9 trillion, Japanese G-SIBs (three banks)—\$7.3 trillion, Canadian G-SIBs (two banks)—\$2.9 trillion [Yamaguchi, Teris, Ahmad, 2022].

Table 5. The Level of Systemic Importance and Systemic Risks of the G-SIBs in 2011–21 (units of measurement—see Notes to the table below)

G-SIB's name	As of 1 November:																						
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	
JPMorgan Chase	–	2.5 (4)	2.5 (4)	2.5 (4)	504	2.5 (4)	495	2.5 (4)	464	2.5 (4)	467	2.5 (4)	441	2.5 (4)	437	2.0 (3)	421	2.5 (4)	437	2.0 (3)	421	2.5 (4)	441
HSBC	–	2.5 (4)	2.5 (4)	2.5 (4)	477	2.5 (4)	439	2.5 (4)	416	2.0 (3)	410	2.0 (3)	410	2.0 (3)	425	2.0 (3)	393	2.0 (3)	425	2.0 (3)	393	2.0 (3)	369
Citigroup	–	2.5 (4)	2.0 (3)	2.0 (3)	426	2.5 (4)	426	2.0 (3)	430	2.0 (3)	410	2.0 (3)	377	2.0 (3)	382	2.0 (3)	369	2.0 (3)	382	2.0 (3)	369	2.0 (3)	377
Deutsche Bank	–	2.5 (4)	2.0 (3)	2.0 (3)	417	2.0 (3)	360	2.0 (3)	357	2.0 (3)	334	2.0 (3)	363	1.5 (2)	295	1.5 (2)	264	1.5 (2)	295	1.5 (2)	264	1.5 (2)	262
BNP Paribas	–	2.0 (3)	2.0 (3)	2.0 (3)	407	2.0 (3)	405	2.0 (3)	329	1.5 (2)	311	1.5 (2)	315	1.5 (2)	314	1.5 (2)	306	2.0 (3)	314	1.5 (2)	306	2.0 (3)	333
Barclays	–	2.0 (3)	2.0 (3)	2.0 (3)	384	2.0 (3)	349	2.0 (3)	308	1.5 (2)	291	1.5 (2)	284	1.5 (2)	276	1.5 (2)	275	1.5 (2)	276	1.5 (2)	275	1.5 (2)	250
Bank of America	–	1.5 (2)	1.5 (2)	1.5 (2)	305	1.5 (2)	324	1.5 (2)	345	2.0 (3)	347	1.5 (2)	326	1.5 (2)	323	1.5 (2)	312	1.5 (2)	323	1.5 (2)	312	1.5 (2)	291
Credit Suisse	–	1.5 (2)	1.5 (2)	1.5 (2)	264	1.5 (2)	269	1.5 (2)	274	1.0 (1)	228	1.0 (1)	211	1.0 (1)	196	1.0 (1)	190	1.0 (1)	196	1.0 (1)	190	1.0 (1)	186
Morgan Stanley	–	1.5 (2)	1.5 (2)	1.5 (2)	259	1.5 (2)	236	1.0 (1)	212	1.0 (1)	213	1.0 (1)	222	1.0 (1)	206	1.0 (1)	207	1.0 (1)	206	1.0 (1)	207	1.0 (1)	221
Goldman Sachs	–	1.5 (2)	1.5 (2)	1.5 (2)	247	1.5 (2)	261	1.5 (2)	252	1.5 (2)	254	1.5 (2)	242	1.5 (2)	236	1.0 (1)	225	1.5 (2)	236	1.0 (1)	225	1.5 (2)	232
Mitsubishi UFJ	–	1.5 (2)	1.5 (2)	1.5 (2)	242	1.5 (2)	242	1.5 (2)	269	1.5 (2)	287	1.5 (2)	281	1.5 (2)	307	1.5 (2)	302	1.5 (2)	307	1.5 (2)	302	1.5 (2)	292
Royal Bank of Scotland	–	1.5 (2)	1.5 (2)	1.5 (2)	238	1.0 (1)	213	1.0 (1)	154	1.0 (1)	128	–	–	–	–	–	–	–	–	–	–	–	–
Société Générale Group	–	1.0 (1)	1.0 (1)	1.0 (1)	225	1.0 (1)	210	1.0 (1)	209	1.0 (1)	200	1.0 (1)	204	1.0 (1)	198	1.0 (1)	195	1.0 (1)	198	1.0 (1)	195	1.0 (1)	204
Group Crédit Agricole	–	1.0 (1)	1.5 (2)	1.0 (1)	218	1.0 (1)	186	1.0 (1)	167	1.0 (1)	161	1.0 (1)	180	1.0 (1)	188	1.0 (1)	197	1.0 (1)	188	1.0 (1)	197	1.0 (1)	201
UBS	–	1.5 (2)	1.5 (2)	1.0 (1)	201	1.0 (1)	189	1.0 (1)	190	1.0 (1)	184	1.0 (1)	189	1.0 (1)	182	1.0 (1)	177	1.0 (1)	182	1.0 (1)	177	1.0 (1)	178
Santander	–	1.0 (1)	1.0 (1)	1.0 (1)	196	1.0 (1)	208	1.0 (1)	202	1.0 (1)	193	1.0 (1)	209	1.0 (1)	201	1.0 (1)	199	1.0 (1)	201	1.0 (1)	199	1.0 (1)	192
Bank of China	–	1.0 (1)	1.0 (1)	1.0 (1)	182	1.0 (1)	207	1.0 (1)	223	1.0 (1)	231	1.5 (2)	254	1.5 (2)	287	1.5 (2)	295	1.5 (2)	287	1.5 (2)	295	1.5 (2)	287
Industrial and Commercial Bank of China	–	–	1.0 (1)	1.0 (1)	181	1.0 (1)	197	1.0 (1)	257	1.5 (2)	266	1.5 (2)	283	1.5 (2)	288	1.5 (2)	297	1.5 (2)	288	1.5 (2)	297	1.5 (2)	303
Wells Fargo	–	1.0 (1)	1.0 (1)	1.0 (1)	171	1.0 (1)	203	1.0 (1)	250	1.5 (2)	242	1.5 (2)	238	1.5 (2)	234	1.0 (1)	220	1.0 (1)	234	1.0 (1)	220	1.0 (1)	176
Mizuho FG	–	–	1.0 (1)	1.0 (1)	151	1.0 (1)	160	1.0 (1)	167	1.0 (1)	187	1.0 (1)	194	1.0 (1)	194	1.0 (1)	202	1.0 (1)	194	1.0 (1)	202	1.0 (1)	219

G-SIB's name	As of 1 November:										
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Bank of New York Mellon	–	1.5 (2)	1.0 (1)	1.0 (1)	151	160	152	153	152	156	160
UniCredit	–	1.0 (1)	1.0 (1)	1.0 (1)	165	148	134	142	142	146	145
State Street	–	1.0 (1)	1.0 (1)	1.0 (1)	147	148	149	147	140	142	146
ING Group	–	1.0 (1)	1.0 (1)	1.0 (1)	132	140	159	161	169	160	155
Sumitomo Mitsui FG	–	1.0 (1)	1.0 (1)	1.0 (1)	142	154	180	173	186	197	193
Groupe BPCE	–	1.0 (1)	1.0 (1)	1.0 (1)	151	126	–	130	129	128	128
Standard Chartered	–	1.0 (1)	1.0 (1)	1.0 (1)	142	133	132	131	140	140	130
Agricultural Bank of China	–	–	–	1.0 (1)	164	191	176	183	180	195	216
Nordea	–	1.0 (1)	1.0 (1)	1.0 (1)	129	123	115	–	–	–	–
BBVA	–	1.0 (1)	1.0 (1)	1.0 (1)	92	–	–	–	–	–	–
China Construction Bank	–	–	–	–	157	210	251	225	224	241	236
Royal Bank of Canada	–	–	–	–	–	–	139	146	153	166	167
Toronto Dominion	–	–	–	–	–	–	–	–	131	144	142

*Notes.*

1. The G-SIBs' list has been published by the FSB since 2011 (in 2011, the list did not include capital surcharges). The left column of each year shows the capital surcharge for systemic importance (as a percentage of CET1 capital); numbers in brackets show the bucket which the G-SIBs are assigned to in accordance with the level of their systemic importance according to the FSB methodology.

2. The right column of each year shows the score of G-SIBs' systemic risk, starting from 2014, in accordance with the BCBS methodology.

*Source:* [BCBS, 2021b; FSB, 2021b; OFR, n.d.].

Table 6. Systemic Risks of the G-SIBs in 2014–21

As of 1 November:														Change (2021 to 2014)		
2014		2015		2016		2017		2018		2019		2020			2021	
number of banks	average score	number of banks	average score	number of banks	average score	number of banks	average score	number of banks	average score	number of banks	average score	number of banks	average score	number of banks	average score	
30	234.9	30	235.3	30	233.6	30	231.0	29	235.0	30	230.5	30	228.7	30	227.7	-3.1%
including:																
Systemic risks of all G-SIBs:																
Systemic risks of the Chinese G-SIBs:																
3	165.0	4	181.3	4	220.3	4	231.0	4	236.3	4	244.8	4	257.0	4	260.5	+57.9%
Systemic risks of the U.S. G-SIBs:																
8	276.3	8	280.4	8	282.6	8	279.3	8	268.3	8	263.8	8	256.5	8	255.5	-7.5%
Systemic risks of the Eurozone G-SIBs:																
10	210.9	9	216.2	9	200.1	8	200.9	8	213.0	8	204.5	8	199.4	8	202.5	-4.0%
Systemic risks of other G-SIBs:																
9	248.0	9	238.3	9	229.4	10	216.6	9	224.3	10	219.0	10	218.6	10	212.6	-14.3%
Systemic risks of the G-SIBs with a capital surcharge of 2% and more:																
6	435.8	6	412.3	6	390.2	5	393.6	4	397.8	3	414.7	3	394.3	4	380.0	-12.8%

Note. The rest of the G-SIBs include banks in the U.K., Canada (since 2017), Switzerland, and Japan.

Source: Table 5.

### *Introduction of TLAC and Its Effect on Regulatory Objectives*

Systemic risks as a cause of banking sector instability and financial crises may diminish the objectives of regulatory reform and call into question the ability of the reform to ensure financial stability. This urged international financial regulators to search for additional, more effective tools of prudential banking supervision that would not only strengthen the market discipline of the G-SIBs, but also contribute to their higher stress resilience and help them withstand macro level uncertainty and crises. In this regard, in November 2015, the FSB conceptualized a new regulatory instrument—Total Loss-Absorbing Capacity (TLAC)<sup>10</sup>—which was supposed to enable the G-SIBs to absorb losses, regardless of their volume [FSB, 2015a].

TLAC is aimed at the minimization of the effect of the G-SIBs' fragile financial position on wider financial stability and, therefore, at minimization of the effect of systemic risks on financial intermediation. Most importantly, TLAC should encourage G-SIBs to change the priorities in using the sources of financial aid, in case of their insolvency, from external sources (for example, at the expense of state or public funds) to internal ones (for example, at the expense of shareholders and creditors). In a broader sense, the introduction of TLAC was to minimize the systemic importance of G-SIBs and, accordingly, reduce crisis developments in the financial sector.

The TLAC structure notionally combines regulatory requirements for both minimum capital adequacy and leverage ratios that contribute to clearer objectives for ensuring financial stability. Within this framework, the quantitative parameters of the G-SIBs' activity become more predictable, which is a key factor in providing insight into global financial markets' dynamics. Moreover, the simultaneous application of the Basel III standards and TLAC yields to a synergetic effect in international banking regulation policy, comparable with the effect of joint application of micro- and macroprudential regulation instruments<sup>11</sup> that is the most effective solution to further minimization of systemic risks. Further, this approach significantly reduced the systemic importance of most G-SIBs,<sup>12</sup> as evidenced by the decrease of capital surcharges for a number of G-SIBs by 2021 (Table 5). On the other hand, the use of TLAC along with the Basel III standards is a more reliable point for regulators to more plausibly assess the level of stress resilience of the G-SIBs, since the debt instruments as part of TLAC can be converted into common shares, thus increasing equity. The introduction of TLAC further supported regulators' efforts to strengthen confidence in the banking sector: the inclusion of debt to TLAC urges the G-SIBs to a more complete disclosure of financial information that would more transparently mirror their activities. This, in turn, stimulates the influx of new investors into the bank and, therefore, the increase of the bank's capital resulting in higher level of operational capacity and fair competition in financial markets. Unlike the Basel III capital surcharge, which only has a moderate effect on G-SIBs' credit risks, TLAC facilitates G-SIBs' more re-

<sup>10</sup> The main objective of TLAC was to restore G-SIBs' function of financial intermediation; its regulatory assessment was based on historical data on losses of leading international banks during crises and their recapitalization [FSB, 2015b]. TLAC is a combination of Tier 1 capital (not less than 67% of total TLAC) and Tier 2 capital, which includes long-term subordinated debt and capital markets instruments (not more than 33%). TLAC has been introduced since 1 January 2019. On average, for all G-SIBs, TLAC is denominated in U.S. dollars (67%) and euros (19%) [FSB, 2019]. In the first half of 2021, the total amount of TLAC across all G-SIBs amounted to \$290 billion, which exceeded the minimum requirements set by the FSB [FSB, 2021c, p. 7].

<sup>11</sup> By combining micro- and macroprudential mechanisms in international banking regulation, it was possible to overcome the consequences of financial deregulation and regulatory lacuna of Basel I and Basel II.

<sup>12</sup> Except for the Chinese G-SIBs, for which TLAC implementation is scheduled from 1 January 2025 [FSB, 2021c]. It is likely that the introduction of TLAC will, to a certain extent, curb the growth in the level of systemic importance of the Chinese G-SIBs (see above for more details).

sponsible corporate governance as well as their more effective resolution, which acts as an early warning tool for the identification of risks of deterioration in their financial position. This not only facilitates prompt adoption measures to strengthen their stress resilience, but also reduces the likelihood of systemic risks in the financial sector, both by reducing the level of systemic importance of the G-SIBs and minimizing the risks of their insolvency.

Implementation of the TLAC concept also benefits the macro level: the combination of capital adequacy and debt holding strengthens market discipline and, therefore, reduces the likelihood of new crises and the social cost of overcoming the crisis aftermath. At the same time, it is assumed that such benefits should outweigh the possible costs at the micro level, which may be associated with both a forced increase in interest rates on bank loans and the TLAC regulatory compliance [FSB, 2015a].

Did the FSB live up to its TLAC-related expectations? With the introduction of TLAC the complexity of the G-SIBs' operating model has somewhat decreased [Martynova, Vogel, 2022], and they showed lower dependence of their profitability on the rigour of the supervisory standards [Dzhagityan, Podrugina, Streltsova, 2020]. This decisively contributed to the decrease of stress in the banking sector. The G-SIBs' higher stress resilience is manifested by growth of their average capital adequacy ratio from 11.0% in 2013 to 12.8% in 2019 [BCBS, 2022], while the synergetic effect of the simultaneous application of capital surcharges and TLAC was evidenced during the COVID-19 pandemic: although the latter was provoked by non-economic causes, the pre-pandemic G-SIBs' key performance indicators recovered within just a few months after the onset of the crisis, which ultimately returned the banking sector to normality. It is worth noting that the improvement of G-SIBs' stress resilience after the introduction of TLAC urged international banking regulators to reconsider their own postulates about the inevitable and forceful contraction of the G-SIBs' assets: shortage of lending facilities would possibly damage the global economy and ultimately jeopardize the conceptual foundation of the post-crisis regulatory mechanism. Moreover, according to findings, there is no relationship between a special regulatory regime applied to G-SIBs and their lending capacity, including the actual amount of extended loans [Behn, Schramm, 2021; Violon, Durant, Toader, 2020].<sup>13</sup> However, the key objective of the post-crisis banking regulation—to put an end to the existence of “too-big-to-fail” banks—has not been achieved: although TLAC has become a tool for reducing the G-SIBs' risks, their systemic importance still continues to be a threat to economic stability if there are no valid regulatory policy tools for resolution of their insolvency.

## Systemic Risks of the G-SIBs as a Challenge to Financial Stability

Although the level of the G-SIBs' systemic risks decreased by 3.1% in 2021 compared to 2014 (Table 6), their systemic importance still threatens financial stability. *Ceteris paribus*,<sup>14</sup> the risks of systemic importance are associated with the increase in disproportions and crisis developments at the macro level, as well as with financial markets volatility, both being the main factors exposing the G-SIBs' activities to deterioration due to global scope and interconnectedness of their activity. This, in turn, activates risk transmission channels in the financial area. Some au-

<sup>13</sup> However, some authors (see, for example: G. Favara, I. Ivanov, and M. Rezende [2021]) hold the opposite opinion, but note that a slight decrease in G-SIBs' lending was offset by growth provided by non-systemic banks. It should also be noted that the decline in lending is also associated with a more thorough check by the G-SIBs of potential borrowers in terms of credit risks.

<sup>14</sup> In this case, we do not consider risks resulting from the G-SIBs' operations with high-margin instruments associated with higher risk which also are used in order to compensate regulatory compliance costs. The market advantages that allow G-SIBs to engage in high-risk operations normally reduce their motivation to comply with market discipline, which is one of the reasons for the decrease in competition in financial markets.

thors conclude that the continued growth of G-SIBs' assets is the main source of systemic risks [Hué, Lucotte, Tokpavi, 2019]. Other authors, however, believe that it is not the bank's size but rather lax regulation of the G-SIBs that may exacerbate systemic risks in an environment where the costs associated with external shocks may exceed the regulatory effect of ensuring their stress resilience. In this regard, interesting is the study by W. Passmore and A.N. von Hafften [2019] in which they propose to strengthen supervision by increasing capital surcharge depending on the G-SIB's funding model, which, in their opinion, would ensure adequate liquidity and reduce the risk of systemic stress in the case of G-SIBs' dysfunction.

An additional source of systemic risks is moral hazard associated with G-SIBs' systemic importance when they are highly likely to receive government aid in case of their insolvency in order to prevent both their bankruptcy and collapse of the financial sector (such assistance was provided by a number of world central banks during the GFC). This issue remains open in the BCBS's 2018 revised methodology for assessment of the performance of the G-SIBs [BCBS, 2018] which was introduced into the regulatory framework from 1 January 2022. As part of the further improvement of banking sector supervision, the BCBS is currently working on conceptualization of quantitative parameters of large risks and liquidity needs necessary for G-SIBs' consistent performance, which most probably would exclude any external financial aid in case of their insolvency.

Although TLAC has decreased G-SIBs' systemic risks, its concept is still missing full integrity. What is meant here is the shortage of transparency regarding the "internal" TLAC—a mechanism for allocation of liquidity between the G-SIBs' head offices and their subsidiaries/branches stemming from G-SIBs' regulatory requirements to be compliant with TLAC [FSB, 2017, p. 11, 2021c, p. 2]. To a certain extent, this adversely affects the investor confidence in the credit institution since the lack of transparency makes it difficult to assess the extent of the G-SIBs' ability to absorb possible losses. This issue is expected to be addressed through the additional measures, forthcoming in 2023, on strengthening the stress resilience of the G-SIBs, including the introduction of a new methodology for supervisory surcharges for systemic importance and an increase in the minimum regulatory requirements for TLAC.

A serious risk to financial stability is the lack of internationally agreed approaches to the G-SIBs' resolution mechanism. Despite the application of common standards of supervision to all G-SIBs, regardless of regulatory regime in their home countries, the legal framework of insolvency of market participants in different countries varies [Buckingham et al., 2019; Guo, 2019], thereby diluting fair and reliable assessment of resolution costs in the context of financial stability. Against the backdrop of regulatory efforts over "de-riskization" of the G-SIBs, the lack of a single methodology for assessing the likelihood of their inconsistency and dysfunction may reduce the effectiveness of regulatory efforts to strengthen their stress resilience and ensure international financial stability, which is critical given increasing differences in the macro level metrics and financial markets dynamics in different countries and regions.

The concern of international regulators about the systemic importance of the G-SIBs is also stipulated by the absence of an approach that would test them for the soundness of the resolution mechanism in times of systemic crises [FSB, 2021c]. The search for an optimal testing model is hampered by the lack of a procedure for converting debt instruments into equity or other ownership instruments, which is the central element of the latest concept of G-SIBs' resolution at the expense of shareholders and creditors (a bail-in approach). Further, in order to develop a resolution testing mechanism, it will be necessary to resolve a number of legal, regulatory, and operational issues related to the criteria and specifics of funding of G-SIBs' foreign subsidiaries/branches as an integral part of the resolution procedure.



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The post-crisis reform of international banking regulation contributed to a higher stress resilience of the G-SIBs, which is a key to the continuity and soundness of financial intermediation, banking sector consistency, and financial stability. This was largely a result of a shift in the priorities of the post-crisis regulatory regime—from a stand-alone surcharge-based supervision over G-SIBs' capital adequacy to its combination with a loss absorption mechanism (TLAC). Simultaneous implementation of Basel III standards and TLAC helped reduce the G-SIBs' systemic risks, thus decreasing threat to macro level instability and crisis developments. The G-SIBs' insusceptibility to external shocks as an outcome of the rigour of the regulatory regime allowed them to regain, if not the role of the locomotive of economic growth, then certainly the role of the anti-crisis stabilizer of the financial sector, as is evidenced by the G-SIBs that have become vehicles of credit liquidity supply to the global economy during the COVID-19 pandemic.

In this regard, there is no doubt that the contemporary model of international banking regulation has no alternative in terms of approaches for minimization of systemic risks and mitigation of systemic stress in the banking sector. As key players in the global financial markets, the G-SIBs have become more savvy in adapting their operating models to external challenges and maintaining their market discipline without any detriment to their performance metrics, which is secured by their loss absorption ability. On the other hand, the transition from external sources of G-SIBs' resolution (a bail-out approach) to internal ones (a bail-in approach) contributes to the reduction of resolution costs at the macro level, thus enabling macro financial authorities to redirect more funds for overcoming the crisis aftermath.

Despite the benefits of the post-crisis regulatory reform, one of which is manifested by a certain decrease in the G-SIBs' systemic importance, “de-riskization” of their operating models lags behind the regulatory objectives of minimization of systemic risks. The main challenge for financial stability remains in the high level of interconnectedness of the G-SIBs, which has a multidirectional effect on their stress resilience, depending on the extent of global financial markets dynamics and volatility. This means that financial regulators should focus on the relationship between the G-SIBs' systemic importance and systemic risks and continue to search for valid instruments that would introduce additional parameters to more accurately measure systemic importance in the banking sector and help to further quantify the optimization of the extent of systemic risks as a threshold of crisis. Whether the level of systemic importance of the G-SIBs can be brought in line with the objectives of further mitigation of systemic stress in the international banking sector in the short run will determine whether the G-SIBs' systemic risks will not adversely affect financial stability in the long run.

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