

Insolvency Resolution of 'Systemically Important Technological Institutions': Uncharted Territory, *Insolvency Law Journal* (2024)

This article was first published by Thomson Reuters in the *Insolvency Law Journal* and should be cited as:

M P Ram Mohan and Sai Muralidhar K, *Insolvency Resolution of 'Systemically Important Technological Institutions': Uncharted Territory*, (2024), 31 *Insolv LJ* 246

This publication is copyright. Other than for the purposes of and subject to the conditions prescribed under the Copyright Act 1968 (Cth), no part of it may in any form or by any means (electronic, mechanical, microcopying, photocopying, recording or otherwise) be reproduced, stored in a retrieval system or transmitted without prior written permission. Enquiries should be addressed to Thomson Reuters (Professional) Australia Limited. PO Box 3502, Rozelle NSW 2039. legal.thomsonreuters.com.au

International Notes

Editor: Dr David Morrison

INSOLVENCY RESOLUTION OF “SYSTEMICALLY IMPORTANT TECHNOLOGICAL INSTITUTIONS”: UNCHARTED TERRITORY

MP Ram Mohan and Sai Muralidhar Kolisetty*

INTRODUCTION

The rapid evolution of Big Tech companies such as Meta, Amazon, Microsoft, Apple, Alphabet Inc, Alibaba, Tencent, Baidu, etc,¹ has posed a host of regulatory concerns to numerous countries and the world at large. The business model of most Big techs is characterised by three features: Data Analytics, Network Externalities and Interwoven Activities (DNA).² The services of Big Techs generate large amounts of Data (D) from its user base that allow them to provide new services that take advantage of the natural network effects (N) of Big Techs and create more activity (A) among users of the Big Tech which once again generates large amounts of Data.³ The endless loop has been characterised as a DNA loop that plays a key role in the expansion of Big Techs. The DNA loop was a key factor that enabled Big Tech to grow in size rapidly and become deeply interconnected with the global economy, particularly the financial systems, thereby becoming systemically important.⁴ The Bank for International Settlements (BIS) has noted that the growing systemic importance of Big Techs has presently led to regulatory concerns in areas covering (1) Competition, (2) Data Privacy and Sharing, (3) Conduct of Business, (4) Operational Resilience, (5) Financial Stability.⁵ These Big Tech Companies have come to be known as Systemically Important Technological Institutions (SITIs).⁶

While significant strides have been made in the areas of Competition, Conduct of Business and Data Privacy in many jurisdictions such as the United States, European Union, and China, little has been done to address the risks posed to financial stability by SITIs.⁷ The present study aims to address this deficiency in the regulatory landscape by analysing a key factor in financial stability regulation, that is, a robust insolvency resolution system for SITIs. The use of regular insolvency frameworks for resolving SITIs would not be feasible for the same reason they are infeasible for other Systemically Important Financial Institutions (SIFIs), non-bank financial companies (NBFCs) and insurers. The size and interconnectedness of SITIs would mean that their failure would generate systemic threats that traditional insolvency regimes are not designed to handle. We argue that a special insolvency regime akin

* MP Ram Mohan: PhD; Professor, Indian Institute of Management Ahmedabad. Sai Muralidhar Kolisetty: Research Associate, Indian Institute of Management Ahmedabad.

¹ The list of Big Techs referred to here only indicates Big Techs today. The companies mentioned are some that have been considered as global big techs by the Bank for International Settlements (BIS), relying on data from the Financial Stability Board, S&P Capital IQ, public sources and BIS. Regional big techs also play important roles in certain economic regions. See Bank for International Settlements, *BIS Annual Economic Report 2019, Ch III. Big Tech in Finance: Opportunities and Risks* (2019) 56–57.

² Bank for International Settlements, n 1, 62.

³ Bank for International Settlements, n 1, 62.

⁴ Juan Carlos Crisanto, Johannes Ehrentraud and Marcos Fabian, “Big Techs in Finance: Regulatory Approaches and Policy Options” (FSI Briefs, 2021).

⁵ Juan Carlos Crisanto et al, “Big Tech Regulation: What Is Going On?” (FSI Insights on Policy Implementation, BIS, 2021).

⁶ Carl Öhman and Nikita Aggarwal, “What If Facebook Goes down? Ethical and Legal Considerations for the Demise of Big Tech” (2020) 9 *Internet Policy Review* <<https://policyreview.info/articles/analysis/what-if-facebook-goes-down-ethical-and-legal-considerations-demise-big-tech>>. See also Financial Stability Board, *BigTech in Finance: Market Developments and Potential Financial Stability Implications* (2019), where the FSB has considered a non-exhaustive list of Big Techs to include Alibaba, Amazon, Apple, Baidu, eBay, Facebook, Google, Microsoft, Tencent.

⁷ Crisanto et al, n 5.



to that existing for SIFIs would be better suited towards mitigating these adverse externalities that the financial system and the broader economy would face in the event of failure.⁸

The systemic risk generated by SITIs could broadly affect financial stability in two scenarios.⁹ First, the failure of these entities is likely to cause severe counterparty contagion and macroeconomic shocks across the financial system. The International Monetary Fund (IMF) has also noted that the failure of any of the top cloud computing services would likely cause material contagion to financial and non-financial companies.¹⁰ Numerous short-term outages of SITIs have caused severe losses to the market. Notably, an outage of Amazon Web Services (AWS) in 2017 led to a 150-million-dollar loss to S&P 500 companies.¹¹ These indicate that any outages due to the failure of these companies would cause material contagion several times larger and for longer. Beyond material contagion, the partnership of SITIs with existing financial institutions to enter the financial market means the SITIs failing/entering insolvency may lead to reputational contagion against already established Banks, NBFCs and other financial institutions. Second, a cyber-attack on any SITI that disables its services for short periods may adversely affect financial stability.

Moreover, studies suggest SITIs possess a competitive advantage over other firms in securing low-interest rate funding.¹² This advantage is due to an expectation of all bondholders lending to SITIs that, should the company fall into trouble, they would be bailed out by the government.¹³ This expectation leads to two issues. First, the risk posed by SITIs is not adequately considered by bondholders.¹⁴

Second, a moral hazard problem arises as it encourages risky spending where the rewards are privatised, and the losses are socialised.¹⁵ The moral hazard problem is already prevalent in financial institutions' operations and is best characterised by Prof Mishkin, who stated, "Financial institutions have been given the following bet: Heads I win, tails the taxpayer loses".¹⁶ A similar bet has been given to SITIs today due to their competitive funding at low-interest rates. A special insolvency framework akin to systemically important financial and insurance institutions¹⁷ is likely to limit the material contagion of a failure. It would also nudge lenders to more adequately price the risks of SITIs due to the absence of bailouts.

The present study addresses the questions surrounding the regulatory approaches to designing such a framework. The paper builds on our previous work examining the systemic importance of big tech companies and the challenges in designating Big Tech Companies as SITIs.¹⁸ It focuses on the financial stability and operational resilience concerns raised by SITIs, particularly in the event of failure/resolution.

⁸ Öhman and Aggarwal, n 6.

⁹ MP Ram Mohan and Sai Muralidhar Kolisetty, "Conceptualizing 'Systemically Important Technological Institutions' as Too Big to Fail Entities: Moving the Insolvency Goal Post" (IIM Ahmedabad Working Paper Series, WP No 2023-10-01, 2023).

¹⁰ Parma Bains, *BigTech in Financial Services Regulatory Approaches and Architecture* (International Monetary Fund, 2022).

¹¹ Laura Stevens, "Amazon Finds the Cause of Its AWS Outage: A Typo", *Wall Street Journal*, 2 March 2017 <<https://www.wsj.com/articles/amazon-finds-the-cause-of-its-aws-outage-a-typo-1488490506>>. See also "Facebook Costliest Outage Caused \$160 Million Loss: NetBlocks", *Hindustan Times*, 5 October 2021 <<https://www.hindustantimes.com/business/facebook-costliest-outage-caused-160-million-loss-netblocks-101633418413175.html>>; "After Massive Outage, Small-business Owners Lament – and Reconsider – Dependence on Facebook", *NBC News*, 5 October 2021 <<https://www.nbcnews.com/business/business-news/after-hours-long-outage-small-business-owners-lament-reconsider-dependence-n1280838>>.

¹² Nordine Abidi and Ixart Miquel-Flores, "Too Tech to Fail?" (EBI Working Paper Series 2022 – No 124, 2022).

¹³ Abidi and Miquel-Flores, n 12.

¹⁴ Abidi and Miquel-Flores, n 12.

¹⁵ Frederic S Mishkin, *The Economics of Money, Banking and Financial Markets* (Pearson Canada Inc, 4th ed, 2011) <https://bibliotheque.pssfp.net/livres/THE_ECONOMICS_OF_MONEYS_BANKING_AND_FINANCIAL_MARKETS.pdf>; Frederic S Mishkin, "How Big a Problem Is Too Big to Fail? A Review of Gary Stern and Ron Feldman's Too Big to Fail: The Hazards of Bank Bailouts" (2006) 44 *Journal of Economic Literature* 988.

¹⁶ See Mishkin, *The Economics of Money, Banking and Financial Markets*, n 15, 228.

¹⁷ *Banking Act, 2009*, c 3, § 7 (Eng). Bank of England, *The Bank of England's Approach to Resolution* (2017) <<https://www.bankofengland.co.uk/paper/2017/the-bank-of-england-approach-to-resolution>>. Bank recovery and resolution Directive 2014/59/EU & Directive (EU) 2019/879, *Dodd-Frank Wall Street Reform and Consumer Protection Act 2010*.

¹⁸ Mohan and Muralidhar Kolisetty, n 9.

The first part identifies the role of existing regulatory authorities in regulating Big Tech Companies and the regulatory models that are in place for Big Tech. The second part looks at attributes of special insolvency frameworks laid down for SIFIs and the tools at the disposal of regulatory bodies. The third part examines the suitability of SIFI frameworks and tools against the backdrop of the unique challenges posed by SITIs. The study highlights the need for ex-post regulation in the form of robust resolution regimes to be the final cog in the regulatory mechanism for SITIs.

I. EXISTING REGULATORY FRAMEWORK OF SITIS

The business model of SITIs is based on the competitive advantage of the DNA loop.¹⁹ Consequentially, their advantage allows them to rapidly scale up in sectors outside their core business, creating several challenges and risks.²⁰

A. Interdependencies in SITIs

The DNA loop leads to several interdependencies that exist both internally and externally. The intra-group interdependencies usually exist because various subsidiary companies of the Big Tech parent company rely on the same payment infrastructure, technological platforms and applications, client data, proprietary credit risk assessment technologies, etc.²¹ A failure in one part of a SITI would have the potential to cause disruptions in all ventures of the parent SITI Company. For example, a failure of AWS would not merely affect not only the hosting and running of Amazon's e-commerce but also the ventures of the company's subsidiaries. This is because they are likely hosted through AWS,²² and the lack of data generation would break the DNA loop.

External interdependencies of SITIs exist in two forms. First, several SITIs act as critical third-party service providers to a number of large financial institutions as well as regional big tech companies.²³ Therefore, a failure of any of these SITIs due to operational disruptions or insolvency would lead to system-wide disruptions across financial and non-financial channels of the economy.²⁴ Second, SITIs entry into the financial services market involves partnerships with established financial institutions.²⁵ These partnerships often allow SITIs to circumvent existing regulations and licensing requirements the partner financial institutions would fulfil.²⁶ The IMF has noted the possibility of such partnerships to encourage riskier lending.²⁷ Further, existing financial institutions' association with these SITIs opens the door for reputational contagion to affect partner financial institutions.²⁸

Presently, SITIs across most jurisdictions are regulated in a piecemeal manner. Further, these regulations are largely activity-based, meaning the regulatory focus is on particular activities conducted by the SITI or its subsidiaries and not on the SITI.²⁹ The external interdependencies created by the SITIs business model, and the associated risks are largely unregulated. Existing regulations have failed to

¹⁹ Hyun Song Shin, "Big Tech in Finance: Opportunities and Risks" (Speech delivered at the BIS Annual General Meeting, Basel, 2019).

²⁰ Juan Carlos Crisanto et al, "Big Tech Interdependencies – A Key Policy Blind Spot" (Bank for International Settlements, 2022).

²¹ Crisanto et al, n 20.

²² "Whois Amazon.Com" <<https://www.whois.com/whois/amazon.com>>.

²³ Crisanto et al, n 20.

²⁴ Crisanto et al, n 20.

²⁵ Alexander Harris, "BigTech – Implications for the Financial Sector" (ESMA Report on Trends, Risks and Vulnerabilities, 2020) 1 <https://www.esma.europa.eu/sites/default/files/trv_2020_1-bigtech_implications_for_the_financial_sector.pdf>.

²⁶ Crisanto, Ehrentraud and Fabian, n 4.

²⁷ Bains, n 10.

²⁸ Crisanto et al, n 20.

²⁹ Johannes Ehrentraud et al, "Big Tech Regulation: In Search of a New Framework" (Occasional Paper FSI, 2022) <<https://www.bis.org/fsi/fsipapers20.htm>>.

consider the potential systemic risks³⁰ generated by such interdependencies.³¹ This is exacerbated by the fact that SITIs are largely governed by activity-based as opposed to entity-based regulation that regulates entities wholly at a macro level that would be capable of accounting for the interdependencies of SITIs.³²

For example, a number of SITIs have entered the financial services sector by setting up proprietary payment systems.³³ While they have obtained the necessary licenses, the activity-based regulation in this sphere does not look at the nature of the reliance of the payment system on other services provided by other subsidiaries of the SITI.³⁴ Given that the operational model of SITIs is based on constant interaction between various services provided by different subsidiaries of the SITI, the current piecemeal activity-based regulations would be insufficient in limiting systemic risks arising in the financial system.³⁵

B. Regulatory Models for SITIs

There exist largely three regulatory frameworks that address these interdependencies. First, a restriction-based approach where SITIs are barred from entering specific financially sensitive sectors.³⁶ However, this would hamper innovation and growth and is an unfavourable approach.³⁷ Second, a segregation approach, where the financial services segment of an SITI is segregated from the rest of the SITI to form a separate financial holding company (FHC).³⁸

A segregation approach is likely to limit the use of common data on any technological platforms due to its reliance on ring-fencing and firewalls, which may impact the efficiency of the SITI. This is a consequence of ring-fencing limiting the data sharing among subsidiaries of SITI. The business model is based on the DNA loop that relies on vast data shared between subsidiaries of the SITI, and such a limitation may lead to the DNA loop breaking, thereby harming the effectiveness of the SITI as a whole.³⁹ The segregation approach would also not address all the sources of systemic risk, such as that arising from cloud computing and other third-party services that they provide, affecting financial stability in the event of failure or operational disruptions. Third, the inclusion approach would address the risks arising from the interdependencies of SITIs by using a group-wide approach that looks at the SITI as a parent company along with all its subsidiary entities.⁴⁰ This, in essence, requires a combination of activity and entity-based regulation. An inclusion approach could be followed even while grouping the financial entities of SITIs into FHCs. To achieve this, group-wide regulations to monitor the relationship between the FHC and the non-financial entities of the SITI are necessary.⁴¹ This varies from the segregation approach, as the objective is not to create barriers at an intra-group level but to closely regulate the activities between financial and non-financial segments of a SITI to actively assess systemic risks and address them sufficiently.

³⁰ Crisanto et al, n 20.

³¹ Crisanto et al, n 20; Mohan and Muralidhar Kolisetty, n 9.

³² Ehrentraud et al, n 29; Vijay Singh Shekhawat et al, “‘Bigtechs’ in the Financial Domain: Balancing Competition and Stability”, *RBI Bulletin*, October 2022.

³³ Financial Stability Board, n 6; Crisanto, Ehrentraud and Fabian, n 4.

³⁴ Mohan and Muralidhar Kolisetty, n 9; Bains, n 10; Tobias Adrian et al, *BigTech in Financial Services* (16 June 2021) IMF <<https://www.imf.org/en/News/Articles/2021/06/16/sp061721-bigtech-in-financial-services>>; Öhman and Aggarwal, n 6; Financial Stability Board, n 6.

³⁵ Fernando Restoy, “Tech Companies in Finance”, *The EUROFI Magazine*, 2021 <https://www.eurofi.net/wp-content/uploads/2021/12/tech-companies-in-finance_ljubljana_september-2021.pdf>.

³⁶ Ehrentraud et al, n 29.

³⁷ Ehrentraud et al, n 29.

³⁸ Ehrentraud et al, n 29. See also Raihan Zamil and Aidan Lawson, “Gatekeeping the Gatekeepers: When Big Techs and Fintechs Own Banks – Benefits, Risks and Policy Options” (January 2022). To understand how China has mandated creation of FHC’s in certain instances with Non-Financial Companies (NFC).

³⁹ Ehrentraud et al, n 29.

⁴⁰ Ehrentraud et al, n 29.

⁴¹ Ehrentraud et al, n 29.

The regulatory frameworks the European Union, United States, and China set up largely follow an inclusion approach. Before exploring how an insolvency framework helps address the financial stability issues posed by SITs, it is instructive to understand the existing regulations set out to regulate SITs.

C. Existing Financial and Non-financial Regulations of SITs

As discussed in the introduction, there has been some progress towards regulating SITs in competition law, data privacy, operational resilience, etc.⁴² The European Union has passed regulations in the fields of Anti-Trust,⁴³ Data Privacy,⁴⁴ and Operational Resilience⁴⁵ and is in the process of beginning their implementation. The United States has also taken steps forward by passing legislation relating to anti-trust⁴⁶ and has several proposed legislations under scrutiny in the realm of data privacy.⁴⁷ In India, new data privacy legislation was enacted in 2023,⁴⁸ and a parliamentary committee report suggested stronger anti-trust legislation for Big Techs.⁴⁹ China has also passed guidelines and regulations to limit anti-trust issues in the digital realm,⁵⁰ enacted data privacy legislation⁵¹ and taken measures to improve the operational resilience of Big Tech Companies.⁵²

⁴² Kevin Werbach and David T Zaring, “Systemically Important Technology” [2022] *Texas Law Review* (forthcoming) <<https://www.ssrn.com/abstract=4053890>>.

⁴³ *Digital Markets Act 2022*, Regulation (EU) 2022/1925. See also European Commission, *The Digital Markets Act: Ensuring Fair and Open Digital Markets* <https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/digital-markets-act-ensuring-fair-and-open-digital-markets_en>.

⁴⁴ General Data Protection Regulation (GDPR), *General Data Protection Regulation (GDPR) – Official Legal Text* <<https://gdpr-info.eu/>>.

⁴⁵ *Digital Operational Resilience Act 2022* (Regulation (EU) 2022/2554); Deloitte Netherlands, *What Can We Expect from the Digital Operational Resilience Act* <<https://www2.deloitte.com/nl/nl/pages/risk/articles/digital-operational-resilience-act.html>>.

⁴⁶ Sen Amy Klobuchar [D-MN], “Text – S.225 – 117th Congress (2021-2022): Competition and Antitrust Law Enforcement Reform Act of 2021” (4 February 2021) <<https://www.congress.gov/bill/117th-congress/senate-bill/225/text>>; See also Arnold & Porter, *Analysis of the Proposed Competition and Antitrust Law Enforcement Reform Act of 2021 | Advisories* (25 February 2021) <<https://www.arnoldporter.com/en/perspectives/advisories/2021/02/analysis-of-proposed-antitrust-reform-act>>; U.S. Senator Amy Klobuchar, *Senator Klobuchar Introduces Sweeping Bill to Promote Competition and Improve Antitrust Enforcement* (4 February 2021) <<https://www.klobuchar.senate.gov/public/index.cfm/2021/2/senator-klobuchar-introduces-sweeping-bill-to-promote-competition-and-improve-antitrust-enforcement>>; Sen Josh Hawley [R-MO], “Text – S.1074 – 117th Congress (2021-2022): Trust-Busting for the Twenty-First Century Act” (12 April 2021) <<https://www.congress.gov/bill/117th-congress/senate-bill/1074/text>>; Sen Josh Hawley [R-MO], “Text – S.1204 – 117th Congress (2021-2022): Bust Up Big Tech Act” (19 April 2021) <<https://www.congress.gov/bill/117th-congress/senate-bill/1204/text>>.

⁴⁷ Sen Maria Cantwell [D-WA], “Text – S.3195 – 117th Congress (2021-2022): Consumer Online Privacy Rights Act” (4 November 2021) <<https://www.congress.gov/bill/117th-congress/senate-bill/3195/text>>; Sen Roger F Wicker [R-MS], “Text – S.2499 – 117th Congress (2021-2022): SAFE DATA Act” (28 July 2021) <<https://www.congress.gov/bill/117th-congress/senate-bill/2499/text>>; Sen Jerry Moran [R-KS], “Text – S.1494 – 117th Congress (2021-2022): Consumer Data Privacy and Security Act of 2021” (29 April 2021) <<https://www.congress.gov/bill/117th-congress/senate-bill/1494/text>>.

⁴⁸ *Digital Personal Data Protection Act 2023* (No 222 of 2023).

⁴⁹ Standing Committee on Finance, *Anti Competitive Practices by Big Tech Companies* (2022) 53 <https://loksabhadocs.nic.in/lsscommittee/Finance/17_Finance_53.pdf>.

⁵⁰ Crisanto, Ehrentraud and Fabian, n 4.

⁵¹ “The PRC Personal Information Protection Law (Final): A Full Translation”, *China Briefing News*, 24 August 2021 <<https://www.china-briefing.com/news/the-prc-personal-information-protection-law-final-a-full-translation/>>; See also Deloitte, *China Draft Personal Information Protection Law (PIPL) – General Introduction and Impact Analysis* (2021) <<https://www2.deloitte.com/content/dam/Deloitte/cn/Documents/risk/deloitte-cn-ra-personal-information-protection-law-brochure-en-210706.pdf>>; The National People’s Congress of the People’s Republic of China, *Data Security Law of the People’s Republic of China* <<https://www.npc.gov.cn/englishnpc/c23934/202112/1abd8829788946ecab270e469b13c39c.shtml>>; See also Chi Chen and Leo Zhou, *How China’s Data Privacy and Security Rules Could Impact Your Business* (18 July 2022) <https://www.ey.com/en_gl/forensic-integrity-services/how-chinas-data-privacy-and-security-rules-could-impact-your-business>.

⁵² *Trial Measures on Regulation of Financial Holding Companies 2020*; See also Fitch Ratings, *China’s Financial Holding Companies Regulation Curtails Contagion Risks* (3 May 2023) <<https://www.fitchratings.com/research/banks/chinas-financial-holding-companies-regulation-curtails-contagion-risks-03-05-2023>>.

While Anti-Trust, Data Privacy and Operational Resilience are three prominent areas of regulatory concern, according to the BIS, financial stability is another key area requiring regulation. There has been very limited progress in passing regulations to ensure financial stability compared to the steady progress in regulating Anti-Trust, Data Privacy and Operational Resilience. Ensuring financial stability involves a combination of ex-ante measures, such as prudential norms for SITIs, and ex-post measures, such as a robust insolvency resolution system to deal with the failure of an SITI.⁵³

Some progress has also been made towards adopting an entity-based approach in addition to the existing activity-based regulation of SITIs. Particularly in the European Union, the European Commission has established “A Europe Fit For the Digital Age”⁵⁴ program under the *Digital Markets Act*⁵⁵ and the *Digital Operations Resilience Act*.⁵⁶ While these are promising, these entity-based regulations do not extend to issues concerning financial stability, particularly insolvency resolution.⁵⁷ Despite the systemic importance of SITIs being acknowledged by global regulators,⁵⁸ most countries have yet to comprehensively establish special insolvency regimes to deal with a potential SITI failure properly.

Regulating any systemically important or too big to fail entities requires a combination of ex-ante and ex-post measures.⁵⁹ A key ex-post measure that hedges the inability of ex-ante measures to prevent Systemically Important Companies from failing is robust insolvency resolution mechanisms. This can be seen in the aftermath of the global financial crisis 2008, when regulators, both at domestic and global levels, established frameworks and guidelines to resolve SIFIs and insurance companies.⁶⁰ Given the systemic implications to financial stability posed by SITIs, regulators should adopt an entity-based approach towards resolving SITIs should the plethora of ex-ante measures taken by regulators worldwide fail to meet their objectives. In understanding an entity-based resolution approach towards SITIs, examining how resolution frameworks for other systemically important institutions have been developed is prudent.

II. RESOLUTION OF SYSTEMICALLY IMPORTANT INSTITUTIONS

Special insolvency frameworks already exist for SIFIs and insurance companies, and their experience over the years could help design an effective framework for resolving SITIs.⁶¹ This section examines the existing tools and policy guidelines being used by SIFIs and Systemically Important Insurer (SIIs) under special insolvency frameworks.

⁵³ Mohan and Muralidhar Kolisetty, n 9.

⁵⁴ European Commission, *A Europe Fit for the Digital Age* (19 February 2020) <https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age_en>.

⁵⁵ *Digital Markets Act 2022*, Regulation (EU) 2022/1925 <<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:2022:265:FULL>>.

⁵⁶ *Digital Operational Resilience Act 2022*, Regulation (EU) 2022/2554 <<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32022R2554>>.

⁵⁷ Crisanto et al, n 5.

⁵⁸ The European Union, United States, India, FSB, IMF etc have all acknowledged that Big Tech Companies as they stand today pose systemic risks and can act as single points of failure.

⁵⁹ Alison M Hashmall, “After the Fall: A New Framework to Regulate Too Big to Fail Non-Bank Financial Institutions Note” (2010) 85 *New York University Law Review* 829.

⁶⁰ FSB, *Effective Resolution Regimes and Policies* (22 August 2016) <<https://www.fsb.org/work-of-the-fsb/market-and-institutional-resilience/post-2008-financial-crisis-reforms/effective-resolution-regimes-and-policies/>>.

⁶¹ Werbach and Zaring, n 42.

A. Attributes of Effective Resolution Mechanisms of Systemically Important Financial Institutions

The Financial Stability Board (FSB)⁶² in 2014 released a report on key attributes that effective insolvency regimes must fulfil to resolve SIFIs, which the IAIS agreed to adopt for SIIs.⁶³ The preamble postulates that for a resolution regime to be successful, it must achieve:⁶⁴

- (1) Continuity of SIFI and any essential payment and clearing mechanisms.
- (2) Protecting depositors, investors, insurers.
- (3) Loss allocation to shareholders and establishing a hierarchy of claims among creditors.
- (4) Ensure no reliance on public exchequer is provided and no expectation that such support would be provided to SIFIs.
- (5) Orderly exit from the market for non-viable firms.
- (6) Legal mandate for co-operation and information exchange by domestic authorities with their foreign counterparts.
- (7) Asset value maximisation and ensuring assets of the SIFI do not rapidly lose value.
- (8) Speedy, transparent and systematic resolution.
- (9) Incentivise market market-driven resolution approach.

A special resolution mechanism must include both stabilisation and liquidation options. Stabilisation options ensure that the SIFI's operations continue through the sale or transfer of the whole or part of the SIFI to a third party through a bridge institution or creditor recapitalisation.⁶⁵ Liquidation options would ensure that the SIFI could liquidate in an orderly manner while protecting the interests of investors, depositors, and creditors.⁶⁶ Most jurisdictions have worked towards developing different stabilisation tools distinct from regular insolvency resolution tools to resolve SIFIs. The FSB has also continued to constantly monitor various nations' progress in developing tools and other prudential norms to address the challenges of SIFIs in their annual reports.⁶⁷

The 2014 FSB report noted that every country must have a designated resolution authority or combination of authorities vested with a wider range of powers to manage distressed SIFIs and resolve them efficiently.⁶⁸ The FSB then recognised the need for provisions that allow early resolution of entities based on pre-determined viability standards and should not rely on default or even balance sheet insolvency.⁶⁹ The report stressed the need for the framework to respect the traditional hierarchy of claims while providing flexibility to deviate from *pari passu* treatment to creditors transparently when warranted in the interest of financial stability.⁷⁰ Creditors must be compensated according to the "No Creditor Worse off" principle.⁷¹ The report underscored the need for countries to establish Crisis Management Groups consisting of financial regulators, resolution authorities, and public authorities who work on enhancing the preparedness of the resolution authorities in dealing with potential failures of SIFIs.⁷² This may be

⁶² FSB, *About the FSB* (1 December 2018) <<https://www.fsb.org/about/>>.

⁶³ Financial Stability Board, *Key Attributes of Effective Resolution Regimes for Financial Institutions* (2014); FSB, *Global Systemically Important Insurers (G-SIIs) and the Policy Measures That Will Apply to Them* (2013).

⁶⁴ Financial Stability Board, n 63, Preamble.

⁶⁵ Financial Stability Board, n 63, Preamble.

⁶⁶ Financial Stability Board, n 63, Preamble.

⁶⁷ FSB, *Promoting Global Financial Stability: 2022 FSB Annual Report* (2022).

⁶⁸ Financial Stability Board, n 63.

⁶⁹ Financial Stability Board, n 63.

⁷⁰ Financial Stability Board, n 63.

⁷¹ Financial Stability Board, n 63. The principle of No Creditor Worse off postulates that no Creditor must be left worse off than they would have been had the distressed entity been liquidated. See also Victor De Serriere and Daphne Van Der Houwen, "No Creditor Worse Off" in Case of Bank Resolution: Food for Litigation?" [2016] *Journal of International Banking Law and Regulation* <<https://www.ssrn.com/abstract=2856370>>.

⁷² Financial Stability Board, *Good Practices for Crisis Management Groups* (2021).

done through various methods, including resolvability assessments, establishing institution-based cross-border agreements, and information sharing between CMGs and other impacted countries.⁷³ FSB further emphasises that the SIFIs and other systemically important entities must work with resolution authorities to develop recovery and resolution plans and periodically review and update these plans to reflect the entity's and market's current financial standing.⁷⁴

B. Resolution Powers for Systemically Important Institutions

While developing frameworks for resolving SIFIs, each country has adopted several tools. In the European Union, the tools available for resolution authorities are provided under the Banking Recovery and Resolution Directive, 2014 (BRRD).⁷⁵ The BRRD provides five resolution tools: bail-in, sale of business, bridge institution, asset separation and permits government stabilisation tool as a last resort.⁷⁶ The bail-in allows for losses to be absorbed by shareholders and creditors through a combination of writing down debt, recapitalisation and conversion of debt into equity.⁷⁷ This safeguards depositors and ensures that the burden does not fall on the taxpayer.⁷⁸ The *sale of business* tool allows the resolution authority to sell the distressed company either partially or wholly to a third party, which is not a bridge institution, even without the consent of shareholders.⁷⁹ The Bridge Institution tool allows for establishing a Bridge Institution that is wholly controlled by public authorities to continue running critical services of the entity for a period no greater than two years or till a private sector solution is obtained.⁸⁰ The asset management tool allows for assets and liabilities of the company to be sold separately to public asset management vehicles, which aim to maximise its value and sell it eventually as part of an orderly wind-up of the distressed entity.⁸¹ Government stabilisation involves rescuing the distressed entity through government funds.⁸² However, the BRRD stresses that this must only be used sparingly and in the rarest of circumstances in the interest of the “greater good of financial and economic stability”.⁸³ Generally, the tools at resolution authorities' disposal may be combined to obtain optimal outcomes.⁸⁴

The resolution of financial companies deemed systemically important in the United States is governed by the *Dodd-Frank Act 2010*. Under this, once a distressed SIFI is brought into the regime, the Federal Deposit Insurance Corporation (FDIC) takes receivership of the entity and transfers the assets of the company to a FDIC established Bridge Institution while leaving the claims of shareholders and unsecured

⁷³ Financial Stability Board, n 72.

⁷⁴ Recovery plans are those which would help distressed firms financially recover and would take place before they meet the conditions that would make them eligible for resolution under the special resolution framework. See also Financial Stability Board, *Recovery and Resolution Planning for Systemically Important Financial Institutions: Guidance on Identification of Critical Functions and Critical Shared Services* (2013) <https://www.fsb.org/wp-content/uploads/r_130716a.pdf>.

⁷⁵ *Bank Recovery and Resolution Directive*, 2014 (Directive 2014/59/EU).

⁷⁶ Pamela Lintner et al, “Understanding Bank Recovery and Resolution in the EU : A Guidebook to the BRRD” (World Bank, 12 December 2016) <<https://documents.worldbank.org/en/publication/documents-reports/documentdetail/100781485375368909/Understanding-bank-recovery-and-resolution-in-the-EU-a-guidebook-to-the-BRRD>>.

⁷⁷ *Establishing a Framework for the Recovery and Resolution of Credit Institutions and Investment Firms 2014* (DIRECTIVE 2014/59/EU), Arts 43–55.

⁷⁸ Lintner et al, n 76.

⁷⁹ *Establishing a Framework for the Recovery and Resolution of Credit Institutions and Investment Firms* (Directive 2014/59/EU), n 77, Arts 38, 39.

⁸⁰ Lintner et al, n 76.

⁸¹ *Establishing a Framework for the Recovery and Resolution of Credit Institutions and Investment Firms* (Directive 2014/59/EU), n 77, Art 42.

⁸² *Establishing a Framework for the Recovery and Resolution of Credit Institutions and Investment Firms* (Directive 2014/59/EU), n 77, Arts 32(4)(d), 37(10), 56–58.

⁸³ Lintner et al, n 76.

⁸⁴ *Establishing a Framework for the Recovery and Resolution of Credit Institutions and Investment Firms* (Directive 2014/59/EU), n 77, Arts 40, 41.

creditors in receivership.⁸⁵ FDIC would transfer control of the bridge institution to private parties after coming to an agreement as soon as possible.⁸⁶

In China, the People's Bank of China (PBC), the China Banking and Insurance Regulatory Commission (CBIRC) and the China Securities Regulatory Commission (CSRC) in 2018 jointly issued Guidelines on Improving Regulation of Systemically Important Financial Institutions (No 301 [2018] of the PBC).⁸⁷ The regulations only provide broad guidelines but do not provide any specific resolution tools to regulators.⁸⁸ The Chinese regulatory model may not be suitable globally due to the unique governance model of China. The Chinese resolution model for SIFIs is still developing,⁸⁹ making it harder for them to develop a regime for SITIs. This would be exacerbated by China being at the forefront of the deepening relationship between the technology and financial sectors.⁹⁰

Having seen the trapping of a resolution framework for systemically important entities in a few countries and their key attributes per the international institutions, it is necessary to see whether these frameworks could be applied to SITIs equally. Further, examining the nature of regulatory bodies required for SITIs both domestically and globally is essential.

III. RESOLUTION OF SITIS

The key facets of SIFIs resolution regimes provide valuable insight for developing resolution mechanisms for SITIs. Given that these resolution mechanisms were developed considering SIFIs, directly transposing these attributes to SITIs would pose challenges. This is due to certain facets of the SITI operational model creating issues that would not traditionally arise in other systemically important institutions. The following section discusses some challenges and the kind of regulatory institutions required.

A. Challenges in Developing an Insolvency Framework for SITIs

There are several unique challenges that SITIs pose, which are distinct from SIFIs. First, one of the biggest sources of systemic risk of SITIs is due to the reliance on SITIs as key third-party service providers for existing financial institutions and several non-financial business entities. Therefore, a key aspect in any insolvency framework of SITIs would be to protect not only creditor and shareholder interests but also customer interests, particularly in the financial sector.

Second, a resolution framework for SITIs would have to ensure that using any of the tools for resolution does not compromise the data and privacy of its customers.⁹¹ The data privacy laws presently are not sufficiently developed to deal with the issues arising from data transfer during a resolution proceeding.⁹²

⁸⁵ Department of Treasury, *Report to the President of the United States Pursuant to the Presidential Memorandum Issued April 21, 2017 Orderly Liquidation Authority and Bankruptcy Reform* (2018) <https://home.treasury.gov/sites/default/files/2018-02/OLA_REPORT.pdf>.

⁸⁶ Department of Treasury, n 85; See also Aaron Klein, *A Primer on Dodd-Frank's Orderly Liquidation Authority* (5 June 2017) Brookings <<https://www.brookings.edu/articles/a-primer-on-dodd-franks-orderly-liquidation-authority/>>.

⁸⁷ "Yinfa No. 301[2018], Guiding Opinions of PBC, CBIRC and CSRC on Improving Regulation of Systemically Important Financial Institutions" <<https://www.pbc.gov.cn/en/3688253/3689009/3788480/3779849/index.html>>.

⁸⁸ Shuai Guo, "Introduction to Recognition of Foreign Bank Resolution Actions" in *Recognition of Foreign Bank Resolution Actions* (Edward Elgar Publishing, 2022) <<https://www.elgaronline.com/display/9781802200553.00008.xml>>; "CBIRC Issues Rules on Implementation of Recovery and Resolution Plans" <<https://www.moodyanalytics.com/regulatory-news/jun-09-21-cbirc-issues-rules-on-implementation-of-recovery-and-resolution-plans>>; China Banking and Insurance Regulatory Commission, *State Administration of Financial Supervision and Administration* <<https://www.cbirc.gov.cn/cn/view/pages/ItemDetail.html?docId=989402&itemId=928&generalType=0>>.

⁸⁹ Guo, n 88; FSB, *2020 Resolution Report: "Be Prepared"* (2020).

⁹⁰ Michael Chui, "Money, Technology and Banking: What Lessons Can China Teach the Rest of the World?" (BIS Working Paper Series, 2021).

⁹¹ Öhman and Aggarwal, n 6.

⁹² Öhman and Aggarwal, n 6.

The use of data trusts⁹³ enables data trustees who are bound by a fiduciary duty to the beneficiaries of the trust to ensure that the privacy and security of users are safeguarded during the resolution process.⁹⁴ Data trusts may prove to be more successful in ensuring data security as opposed to other regulatory bodies.⁹⁵

Third, there is a high concentration of service providers among SITIs,⁹⁶ and the failure of certain SITIs is considered a single point of failure.⁹⁷ Therefore, a resolution framework for SITIs must ensure that the concentration of services and dependencies on SITIs does not increase.

Fourth and Last, some of the tools used to resolve SIFIs may not be feasible for SITIs. The SITI business model is based on the DNA loop and the large data sets they obtain from different business wings.⁹⁸ The inherent value of the SITI, therefore, lies in the various services' access to data due to interconnectedness. For example, several SITIs have been developing proprietary credit risk assessment technologies that rely on data relating to borrowers obtained from the overall SITI ecosystem. The cash flows and transactions of customers using various services of the SITI generate data that helps develop the risk assessment technology.⁹⁹ The intrinsic value of these services and some entities lies in their interconnectedness with the SITI ecosystem. Therefore, if implemented, certain resolution tools, such as asset management or partial sale of certain entities of the SITI, would only lead to fire sales since these assets' value would likely depreciate rapidly if they were separated from the larger ecosystem. This would also mean that resolving SITIs would be far more complicated given that there is a greater need to retain the SITI as a whole, and only a limited number of entities can be separated and transferred to third parties without destroying the underlying value.

B. Global and Domestic Regulators for SITIs

Any insolvency framework to properly resolve SITIs would require a designated resolution authority or a combination of authorities.¹⁰⁰ This designated authority could be an existing authority or a newly established regulator for SITIs.

Presently, regulators of SITIs largely exist only at an activity-based level, regulating specific tasks, as explained earlier.¹⁰¹ This means that designating these activity-based regulators in their current form would be insufficient. The current regulatory landscape merits an entity-based approach focusing on a Macro-Prudential orientation¹⁰² similar to that employed for Globally Systemically Important Banks (G-SIBs) to enable regulating the systemic risks posed by SITIs to the overall financial system and the broader economy.¹⁰³

⁹³ Data trusts operate similar to traditional trusts where a fiduciary relationship is established between an independent entity and the beneficiary (customer/users), thereby protecting the interests associated with such data. "How Data Trusts Can Protect Privacy", *MIT Technology Review* <<https://www.technologyreview.com/2021/02/24/1017801/data-trust-cybersecurity-big-tech-privacy/>>.

⁹⁴ Öhman and Aggarwal, n 6; Sylvie Delacroix and Neil D Lawrence, "Bottom-up Data Trusts: Disturbing the 'One Size Fits All' Approach to Data Governance" (2019) 9 *International Data Privacy Law* 236.

⁹⁵ Öhman and Aggarwal, n 6.

⁹⁶ "As 'big Tech' Dominates Cloud Use for Banks, Regulators May Need to Get Tougher" <<https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/as-big-tech-dominates-cloud-use-for-banks-regulators-may-need-to-get-tougher-59669007>>.

⁹⁷ Bains, n 10.

⁹⁸ Shin, n 19.

⁹⁹ Lei Liu, Guangli Lu and Wei Xiong, "The Big Tech Lending Model" (NBER Working Paper Series, 2022) <https://www.nber.org/system/files/working_papers/w30160/w30160.pdf>.

¹⁰⁰ Financial Stability Board, n 63.

¹⁰¹ Ehrentraud et al, n 29.

¹⁰² A Macro-Prudential orientation takes into account the systemic risks posed by the entity as a whole along with the cyclical pattern of systemic risk, that Micro-Prudential regulations often fail to address. See Claudio Borio, Stijn Claessens and Nikola Tarashev, "Entity-based vs Activity-based Regulation: A Framework and Applications to Traditional Financial Firms and Big Techs".

¹⁰³ Borio, Claessens and Tarashev, n 102.

The approach taken regarding G-SIBs is reflected in the *Dodd-Frank Act* in the United States. The act established the Financial Stability Oversight Council, which plays a key role in determining systemically important financial entities and works towards improving collaboration among regulatory agencies regarding threats to financial stability.¹⁰⁴ Similarly, at a global level, in the aftermath of the global financial crisis, in an effort to strengthen financial regulation the world over and limit irresponsible practices, the G-20 established the FSB.¹⁰⁵ The FSB is tasked with promoting financial stability internationally and co-ordinating among various countries' financial regulators and standard-setting bodies to ensure robust regulatory frameworks protecting the financial system in all nations.¹⁰⁶

Therefore, in adopting an entity-based approach towards regulating SITIs and ensuring that SITIs do not cause disruptions to financial stability, it may be desirable to either establish a specific regulator for SITIs or widen the ambit and scope of existing regulators. Given the global nature of SITIs and the highly globalised world that exists today, it is necessary that SITIs are not just regulated domestically but globally as well. In the absence of a global regulator, it may be desirable to establish a regulator for SITIs globally or widen the scope of the FSB itself to deal with the risks posed by SITIs given that of the key risks to financial stability posed by SITIs is their interdependencies with financial institutions. At a domestic level, existing financial regulators, with the support of other national institutions/regulators, may be capable of handling the resolution process by taking assistance from industry experts in the technology sector. Such entities could also be crucial in setting up information sharing across jurisdictions, a key attribute of an effective resolution framework.¹⁰⁷ In India, the Reserve Bank of India has suggested that fin-techs must be more proactive in self-regulation.¹⁰⁸ It remains to be seen whether self-regulation would be effective for Big Techs/SITIs, which are much larger and more deeply interconnected with the economy.

IV. CONCLUSION

The emergence of Big Tech Companies and their rapid evolution, particularly into financial services, has led to numerous regulatory challenges in anti-trust, data privacy, governance, operational resilience and financial stability. At the same time, SITIs have revolutionised our world as we know it with unprecedented levels of innovation and technological advancements. Therefore, it is important that the regulatory framework designed for SITIs does not stifle this innovation and hamper the economic benefits.

The pressing need to regulate big tech has been acknowledged by regulators in various countries, which is reflected in enacting or proposing a host of new legislations and policy measures. These legislations and policies aim to provide greater regulatory oversight of SITIs without stifling their growth and innovation. While these regulations are important in ensuring oversight of SITIs, an important regulatory concern of financial stability has largely gone unregulated. Historically, exclusive use of ex-ante regulations of systemic institutions has not always been sufficient. It is crucial to establish robust insolvency frameworks that can resolve any SITI in the event of its failure while ensuring minimal operational disruptions. Such frameworks must consider the unique challenges posed by the DNA loop that creates value around the entire SITI ecosystem and other unique features of SITIs. An insolvency framework for SITIs remains the last line of defence against the systemic risk and financial stability challenges posed by SITIs.

¹⁰⁴ U.S. Department of the Treasury, *About FSOC* (6 April 2023) <<https://home.treasury.gov/policy-issues/financial-markets-financial-institutions-and-fiscal-service/fsoc/about-fsoc>>; U.S. Department of the Treasury, *Council Work* (27 June 2023) <<https://home.treasury.gov/policy-issues/financial-markets-financial-institutions-and-fiscal-service/financial-stability-oversight-council/council-work>>.

¹⁰⁵ G-20, "Leaders' Statement the Pittsburgh Summit" <https://www.fsb.org/wp-content/uploads/g20_leaders_declaration_pittsburgh_2009.pdf>; FSB, *History of the FSB* (1 February 2023) <<https://www.fsb.org/about/history-of-the-fsb/>>.

¹⁰⁶ FSB, n 62.

¹⁰⁷ Financial Stability Board, n 63.

¹⁰⁸ Gopika Gopakumar, *RBI Urges Fintech Firms to Set up Self-regulatory Body Soon* (6 September 2023) mint <<https://www.livemint.com/economy/rbi-urges-fintech-firms-to-set-up-self-regulatory-body-soon-11694019680309.html>>.