June 10, 2024
Asian Monetary Policy Forum, Singapore

Still Too Big To Fail?

Lessons from the first post-Lehman GSIB failure

Beatrice Weder di Mauro
Geneva Graduate Institute, INSEAD and CEPR

Abstract

After a decade of reforms aimed at ensuring no bank is too-big-to-fail, the collapse of Credit Suisse served as the first real-life test of this framework. A resolution following the international and Swiss too-big-to-fail framework would have involved recapitalizing Credit Suisse by bailing in all loss-absorbing capital. Instead, Swiss authorities opted for a state-supported acquisition of Credit Suisse by UBS. This raised concerns about the applicability of the entire too-big-to-fail regime, leading some observers to dismiss it entirely. In the ongoing discussion on the regulatory implications of this near miss, a series of reports have made numerous recommendations. This paper argues that the focus should be on necessary reforms to ensure that taxpayers do not bear the risk of GSIB failure. Reforms should enhance the robustness and credibility of the bail-in resolution regime. At a minimum, this means ensuring cross-border legal certainty of bail-in, securing funding in resolution, and expanding resolution options. Additionally, a proposed special recovery regime for GSIBs should mandate early supervisory intervention, ensure timely restructuring, and provide adequate capitalization.

Introduction

The current international framework for regulating Global Systemically Important Banks (GSIBs) was born from the trauma inflicted by the Global Financial Crisis (GFC). The disorderly bankruptcy of Lehman Brothers triggered a global systemic collapse, forcing governments to extend massive bail-outs. The US, UK, and Euro area each committed around 25% of GDP in capital and guarantees in support of their banks, in Ireland's case, the total government commitment amounted to 130% of GDP.[1] A decade after the GFC, OECD countries collectively had not yet regained their pre-crisis output potential.[2] Moreover, the long-term social and political disruptions stemming from the 2008/09 financial crisis are difficult to overstate.

In response, policymakers vowed "never again." They tasked the Financial Stability Board (FSB) and the Basel Committee with crafting regulations aimed at facilitating the orderly resolution of globally systemic banks, with the primary objective of ensuring that no bank would be considered too-big-to-fail. A decade of regulation and reform followed. Equity buffers and total loss absorbing capital were built up, macro-prudential tools established, procedures for recovery and resolution instated. In the wake of the COVID-19 pandemic, regulators generally concluded that their efforts had proven effective: the banking system had exhibited resilience in the face of a significant shock.

Just as a sense of complacency and regulatory fatigue began to set in, the United States experienced a fresh wave of banking crises, with spillovers to the rest of the world. And then, for the first time since Lehman a Global Systemically Important Bank (GSIB) was teetering on the brink. On March 19th, authorities and market participants worldwide were holding their breath: would Credit Suisse become another Lehman moment for the world economy?

It did not. Swiss authorities brokered a gunshot marriage between Credit Suisse and UBS, markets soon calmed down. However, the regulatory and political fallout persists and the debate on the lessons is ongoing. The FSB (2023) issued initial lessons learned; the Swiss government tasked an Expert Group on Banking Stability to derive insights (Eggen et al.,

[1] See Stolz and Wedow, 2013
[2] See Turner and Ollivaud, 2019

2023); both the Swiss National Bank (SNB 2023) and Supervisor (FINMA, 2023) provided their perspectives, and most recently the Swiss Federal Council (2024) published recommendations for reform. A Swiss parliamentary investigation is expected to report back in the fall. With each report offering extensive lists of recommendations, distinguishing the most pertinent ones may prove challenging. While many recommendations could be beneficial, they may fall short of ensuring that the risk of GSIB failure doesn't burden taxpayers.

This is the aim of this paper, to single out the minimum necessary conditions for an effective global TBTF framework. It argues that the focus should be on two matters: the feasibility and robustness of the resolution regime and the credibility of the recovery regime. The remainder of the paper is organized as follows: Part I gives a selective reviews the post-Lehman lessons and reforms. Part II discusses the background and facts of the case of Credit Suisse. Part III draws out the lessons of the global TBTF framework.

I. Post GFC: Two key lessons and reforms

The post-GFC Basel reforms span thousands of pages and years of negotiations and implementation. Some, such as the Basel III endgame, are still fiercely debated in the US. I won't delve into the specifics of these reforms, but rather concentrate on the two primary shortcomings they aimed to rectify: firstly, banks had inadequate capital, and secondly, authorities lacked tools for handling cross-border resolution.

1. A crisis of solvency: Focus on capital

The GFC was a crisis of solvency. Banks, especially those engaged in complex financial activities such as mortgage-backed securities and derivatives trading, operated with inadequate capital buffers to absorb losses when market conditions deteriorated. The crisis highlighted the systemic implications of this undercapitalization, as distress in one

institution quickly spread throughout the financial system, leading to widespread panic and instability. Banks' reliance on leverage to amplify returns magnified their vulnerability, as small losses were often enough to wipe out their thin capital cushions, triggering cascading failures and exacerbating the crisis. The experience of this crisis underscored the fundamental importance of adequate capitalization for banks to weather economic downturns and absorb unexpected losses.[3] Thus, a prime focus of the regulatory reforms was to improve the quality and quantity of loss absorbing capital.

The international capital framework that ultimately materialized has the following characteristics:

- Systemically important institutions are categorized into different buckets based on their size, interdependence, complexity, substitutability, and cross-border linkages. GSIBs (Global Systemically Important Banks) are subject to special regulations and progressively higher capital requirements (see Appendix I).
- Total Loss Absorbing Capital (TLAC) is structured into three components. At its core is Equity Tier 1 capital (CET1), followed by instruments designed to automatically convert into equity (Additional Tier 1 capital, AT1), and finally, bail-in bonds, which would convert to equity once a bank is deemed non-viable. CET1 and AT1 are so called going-concern capital which would absorb losses in a recovery phase. Bail-in bonds are gone-concern capital, i.e. they would absorb losses after supervisors have called the point-of-non-viability (PONV) and have initiated recovery and restructuring procedures.

Figure 1, panel b, shows the resulting capital structure using Swiss requirements. Excluding progressive components and other add-ons, Swiss GSIBs are required to hold a total loss-absorbing capital of 28.5 percent of risk-weighted assets (14.3 percent for going concern, comprising CET1 + AT1 capital, and 14.3 percent for bail-in bonds). A second requirement is expressed in terms of the leverage ratio, with going concern capital of 5 percent and bail-in

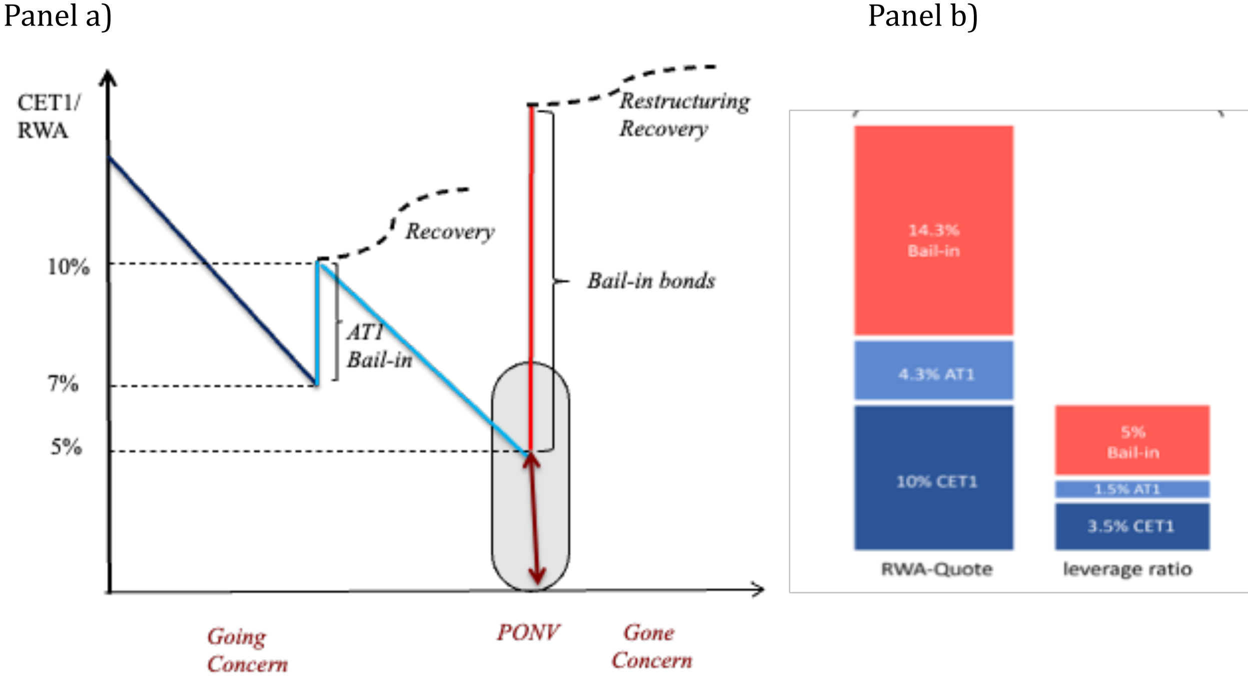
[3] See eg. Admati and Hellwig (2013)

bonds of 5 percent of total assets[4]. Both capital requirements must be fulfilled, meaning that at any point in time, the leverage ratio or the risk-weighted ratio might be the binding criterion.

Overall, this capital regime represents a significant increase of banks' equity buffers compared to the situation pre-GFC. However, most of the total loss-absorbing capital is held in the form of contingent bonds (AT1 and bail-in bonds), designed to convert to equity or be written down. Banks favour this structure because, during good times, these convertibles are less expensive than core equity. Nevertheless, for the convertibles to effectively absorb losses during bad times, the bail-in mechanism needs to be credible—an issue we address below.

Figure 1 : Capital structure and GSIB capital requirements in Switzerland

Panel a) Panel b)



Source: Stylized own graph and FINMA for Swiss capital requirements for GSIBs

[4] More precisely, the leverage ratio is defined in terms of the Leverage Ratio Denominator, which includes some off-balance sheet items.

2. No cross-border resolution mechanism: "Keep your toxic assets".

A second major shortcomings exposed by the GFC was the absence of effective tools for resolving failing large banks with cross-border operations. Traditional resolution mechanisms were designed primarily for domestic banks, not to address the complexities inherent in resolving global financial institutions. The absence of coordinated procedures for managing failing banks across different jurisdictions exacerbated the challenges of containing the crisis and protecting financial stability.

Mervin King famously stated that "banks are global in life but local in death". The lack of cross-border resolution tools meant that the burden of dealing with failing global banks fell primarily on the governments where these institutions were headquartered and that many resorted to ring-fencing measures to protect domestic taxpayers and financial systems.

The prime goal of TBTF reforms was to ensure that in future risks associated with bank failures would be borne by shareholders and investors rather than taxpayers and that even globally active banks would be resolvable.

The FSB defined a list of key attributes for effective resolution regimes, which are regularly monitored. An effective resolution regime would, at a minimum, need to preserve vital economic functions, establish a credible pathway for managing orderly restructuring and recovery, and enable cross-border crisis management and cooperation.[5]

GSIBs were required to prepare *recovery and resolution plans* (living wills) and undergo regulatory scrutiny and regular stress testing. However, given that GSIBs operate in multiple countries and no global resolution authority was established, a significant challenge arose in managing cross-border conflicts of interest. In a crisis, national authorities are tempted to attempt minimize losses locally, thus endangering a globally optimal resolution strategy.[6]

[5] see FSB (2011)

[6] The strategic problem is that, during a crisis, every country has an incentive to shield itself from local losses by implementing ring-fencing measures. However, this increases the risk of insolvency for the entire banking group and increases overall losses—the socially undesirable outcome (see Faia and Weder di Mauro, 2016). The optimal social reform would have been the establishment of a global resolution authority empowered to seize the entire group's capital and assets, allocating losses without regard for national borders. Unfortunately, post-GFC reforms fell short of this ideal.

As a result, *Crisis Management Groups* (CMGs) were formed for all GSIBs to streamline cross-border management and resolution efforts. Home and host authorities were tasked with creating institution-specific cooperation agreements to define their roles and responsibilities, as well as establish protocols for coordination and information sharing.

Most GSIBs adopted a Single Point of Entry (SPE) resolution strategy. Under this approach, the "home" resolution authority is responsible for globally supervising the group and holds the resolution powers, such as bail-in or transfers, which are executed at the top parent or holding company level. In the SPE model, theoretically, only the parent company is subject to bail-in resolutions, while all other group entities should maintain sufficient capitalization and operate as going-concern entities. However, in practice, regulators in many host countries exhibited limited trust in the SPE model and imposed additional local requirements. Specifically, they mandated cross-border banks to establish subsidiaries rather than branches and enforced local capital and liquidity requirements. This resulted in fragmentation, with pre-positioning of capital and liquidity and restrictions of transfers to the parent company.

The main resolution tool is *bail-in,* which empowers the resolution authority to stabilize a firm and facilitate a creditor-funded reorganization, ie. equity holders and unsecured, uninsured creditors incur losses through write-downs. The institution is recapitalized by writing down bail-in bonds and converting to new equity. [7]

Figure 1, panel a, illustrates a stylized sequence of bail-in, calibrated to the Swiss requirements. The scenario assumes a bank facing a solvency crisis with a continuous erosion of capital. As the equity ratio diminishes to 7 percent, AT1 bonds are automatically subjected to write-down (with most Swiss AT1 instruments are write-down rather than conversion), and the bank is recapitalized as a going concern. Should the bank fail to recover and continue experiencing equity losses, the supervisor (alongside the resolution authority) activates the point of non-viability (PONV), leading to the write-down of bail-in bonds. Consequently, these debtholders transition into new shareholders, and the restructured entity, now significantly capitalized, embarks on a phase of restructuring, repositioning, and

.
[7] See FSB (2023)

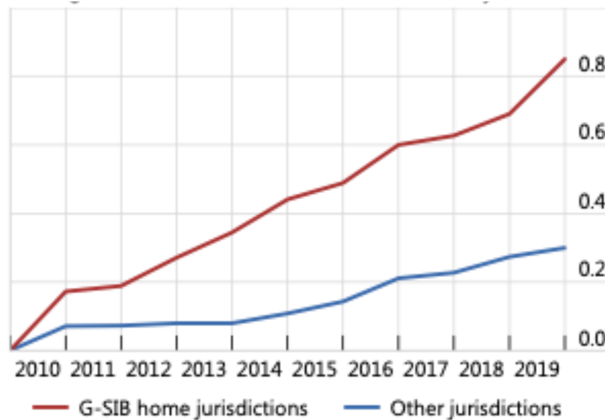
downsizing, with the objective of rebuilding trust in the business model and restoring market confidence.

3. The TBTF review of 2021 – mostly fine

After more than a decade of reforms, the Financial Stability Board conducted a comprehensive review of the too-big-to-fail framework in (FSB 2021), offering an overall favourable assessment of regulators' efforts with respect to GSIBs. The review underscored notable advancements in resolution regimes and market confidence in the credibility of Systemically Important Banks (SIBs) following the implementation of reforms (FSB 2021). Significant progress had been made in implementing resolution reforms, especially in jurisdictions hosting G-SIBs. Most home and host jurisdictions now had comprehensive regimes for resolving failing banks, with many authorities having produced resolution plans for G-SIBs. Cross-border crisis management groups had been established, and cooperation agreements signed. See Figure 2.

Figure 2: Resolution Reform Index (RRI) score

for GSIB home and other jurisdictions



Source: FSB 2021 (Figure 5),

Moreover, the FSB found that G-SIBs mostly meet TLAC requirements, ensuring they had sufficient equity and debt resources to absorb losses and recapitalize without taxpayer support. Market evidence suggested that resolution had become more credible. Credit rating agencies had removed assumptions of sovereign support in several jurisdictions, expecting bail-ins for failing SIBs. The review identified deficiencies in reform implementation, which proved consequential during the initial real-world trial of a failing GSIB. However, it was not forceful and focus on significant issues, to which we turn next.

II. The first real life test of the TBTF framework

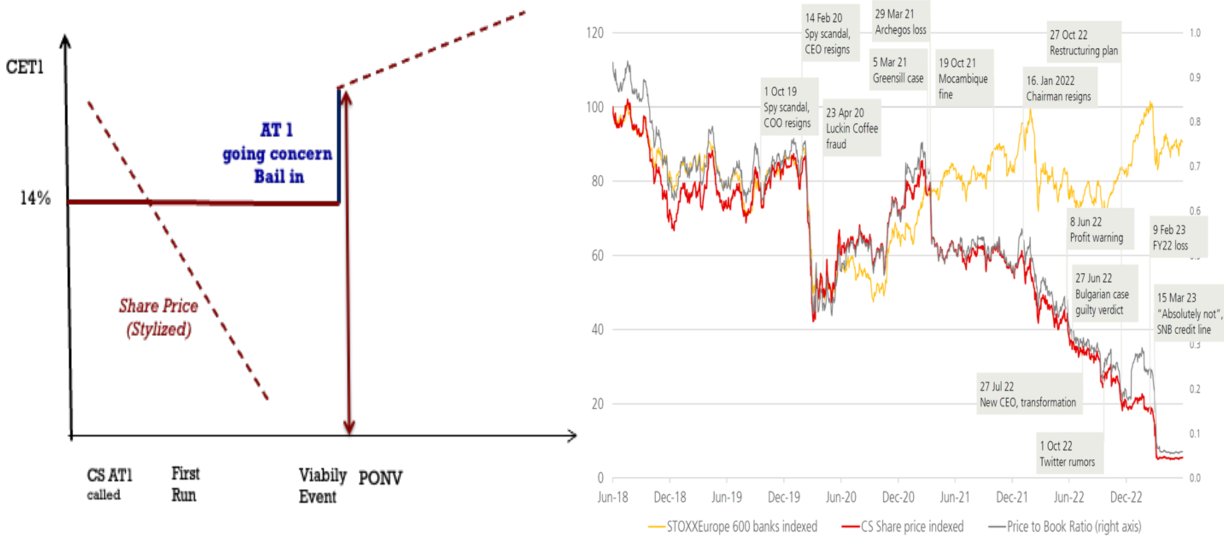
The collapse of Credit Suisse was the first real-life test of the TBTF framework. Smaller banks had failed before, but Credit Suisse was the first global systemically important bank (GSIB) that teetered on the brink in March 2023. A resolution following the Swiss too-big-to-fail framework would have implied a recapitalization of Credit Suisse by bailing-in all loss absorbing capital. However, the Swiss authorities chose not to apply this framework and instead orchestrated a state-supported acquisition of Credit Suisse by UBS.

1. Failure of business model and risk management

The initial point to note is that Credit Suisse was extraordinary in its predicament. By the time clients lost confidence and started running for their deposits the crisis had been in the making for years. Credit Suisse stock price had been declining steadily since 2015 and the last years had been characterized by persistent losses, scandals, flawed strategies, and poor risk management practices. These issues had eroded its reputation and shaken confidence in the viability of its business model.

Consequently, the share price and the price to book ratio of Credit Suisse had fallen by over 90 percent since 2021. During the same period, the STOXX Europe index of banks had seen an increase of approximately 10 percent (Figure 3, panel b).

Figure 3: Stylized capital (panel a) and share price, price to book ratio of CS (panel b)



Source: Own graphic and Swiss Expert Group Report, Eggen 2023

Despite scandals and losses, CS managed to fulfil capital and liquidity requirements. In fact, it was holding more than the minimum in capital right into the crisis. Table 1 shows, that CET1 was steadily above 14 percent on a risk weighted bases and around 5 percent on a non-risk weighted basis over the last 3 quarters of its independent life. TLAC amounted to almost 100bn USD on risk weighted assets of about 240bn and total assets of about 540bn USD. Thus, it is fair to say that CS was not a crisis of solvency. In other words, capital was not the problem of CS – at least not at the consolidated group level.

The main problem of CS was a continuous failure of governance, of risk management and risk culture, which may have been somewhat exacerbated during the COVID pandemic. [8] As a consequence, investors lost confidence in the business and the ability of management and the viability of the business model.

[8] For a detailed account of the long run problems of Credit Suisse and the supervisory actions during the run up see FINMA 2023 .

Table 1: Capital at CS in the run-up to the crisis

Billion	Q1 2023		Q4 2022		Q3 2022		Min.
Capital, risk-weighted							
CET1	35.8	14.7%	36.7	14.6%	39.9	14.6%	10.0%
CET1 + AT1 (going concern)	49.4	20.3%	50.0	19.9%	50.1	18.3%	14.3%
TLAC (going and gone concern)	97.9	40.2%	99.1	39.5%	97.4	35.5%	28.6%
Risk-weighted assets	243.8		251.0		274.1		
Capital, unweighted							
Leverage ratio CET1	32.8	5.0%	32.7	5.0%	41.7	4.9%	3.5%
LR CET1 and AT1 (going concern)	49.4	7.6%	50.0	7.7%	50.1	5.9%	5.0%
TLAC (going and gone concern)	97.9	15.0%	99.1	15.2%	97.4	11.5%	10.0%
LR denominator	653.0		650.5		836.9		
Total assets	540.3		531.4		700.4		

Source: Swiss Expert Group Report, Eggen et al 2023

An example of mismanagement is the case of Archegos. In 2021 Credit Suisse lost 5.5 bn USD, more than any other bank, in the collapse of Archegos Capital Management, the family office of Sung Kook Hwang, a former hedge fund manager based in NY. In response, the Credit Suisse board appointed a Special Committee to review what had gone wrong. The report was published (Credit Suisse 2021) and painted a disturbing picture of the risk culture, and the organizational and operational failures that contributed to the significant losses and eventually to the loss of confidence in the bank. Here is a selection of the key observations (p. 23 ff.):

- Failure to act on known information: Despite having information about the mounting risks posed by Archegos, both the business and risk departments failed to take appropriate action. The business mismanaged the situation, focusing on increasing

revenues rather than mitigating risks. Risk, on the other hand, didn't push back on the business or impose deadlines for risk reduction. Limit breaches were repeatedly ignored.

- Failure of IB senior management to engage: Senior management within CS failed to engage, challenge, oversee, or escalate the risks posed by Archegos. Despite alarming information presented at meetings, they didn't take decisive action or escalate concerns to higher levels.[9]
- Failure to adequately invest in risk culture and technology: CS didn't invest sufficiently in staffing, training, or technology to manage risks effectively. Staffing shortages and inadequate technology hindered risk management efforts, while expertise within the bank that could have been utilized was overlooked.
- Failure of risk systems: Challenges in CS's systems and infrastructure hindered the timely and accurate assessment of risk. Outdated risk tools and delayed data access prevented Risk from fully understanding the magnitude of the risks posed by Archegos.

In October 2022, a false social media post sparked a wave of withdrawals from wealthy Asian clients of CS. The crisis management committee promptly activated and began preparations for potential resolution. However, deposit outflows gradually tapered off, and by year-end, CS management expressed confidence in achieving a turnaround. Yet, come March 2023, amid widespread uncertainty fuelled by banking crises in the US, the run on CS intensified. This time, retail clients within the Swiss entity joined the fray. On March 15th, authorities

---

[9] See e.g. excerpt from the Special Board Committee Report, CS 21, *p. 51*: *"The U.S.-based Co-Head stated that he had responsibility for Prime Brokerage and did not supervise or have responsibilities for Prime Financing in the United States or elsewhere. The U.K.-based Co-Head asserted that the division of labor between the two Co-Heads became more regional during the COVID-19 pandemic and that he was in charge of all EMEA businesses, while the U.S.-based Co-Head was in charge of all businesses in the United States. In all events, neither of the Co-Heads of Prime Services believed he was specifically responsible for supervising CS's relationship with Prime Financing clients in the United States—including Archegos. Indeed, neither claimed any particular familiarity with Archegos (including its persistent limit breaches) before the default, notwithstanding that Archegos was among Prime Services' top 10 clients throughout the period, ultimately becoming its third largest hedge fund counterparty by gross exposure before its default."*

attempted to soothe the situation by declaring that CS met solvency criteria and that the Swiss National Bank stood ready to offer emergency liquidity assistance. But it was too late. All they could do was to gain some time to get to the resolution weekend.

2. The resolution weekend of March 19th, 2023

A troika of Swiss authorities (Federal Council, FINMA and SNB) managed the resolution weekend. In the run up to the weekend they had considered several options (FINMA 2023, p 19ff):

1. Resolution of CS: FINMA declares the point of non-viability and orders restructuring and capital measures, following the script of the resolution plan.
2. Nationalisation and temporary public sector ownership: This option is not foreseen in the Swiss TBTF regime and would have required emergency law.
3. Assisted Merger of Credit Suisse with UBS.
4. Bankruptcy and activation of the Swiss Emergency Plan, which would have meant sheltering the systemically important parts of CS in Switzerland only and liquidating the rest.

In the end, the merger was considered the least risky option, and the following deal was struck: [10]

- UBS paid 3bn USD to CSs shareholders, and in addition received some public guarantees.
- Credit Suisse's AT1 bonds (CHF 16 billion) were wiped out. This did not require emergency law since Swiss AT1 contained a clause which permitted a full write-down if public support was provided (CS 2022).
- Liquidity support of about CHF 250 billion was provided by the Swiss National Bank.
- Emergency law was used to enact a Public Liquidity Backstop (PLB) to insure the SNB against possible losses for funding in resolution. A PLB had been under discussion

[10] See Lengwyler and Weder di Mauro (2023)

and review for years, but there had been principled resistance against any public sector involvement.

- The Swiss federal government assumed a second loss tranche guarantee capped at CHF 9 billion for certain hard to value assets. UBS took the first loss of CHF 5 bn. UBS returned the guarantees on August 11. The federal government had earned about CHF 200 million on the guarantees.

3. Why not to apply bail-in resolution?

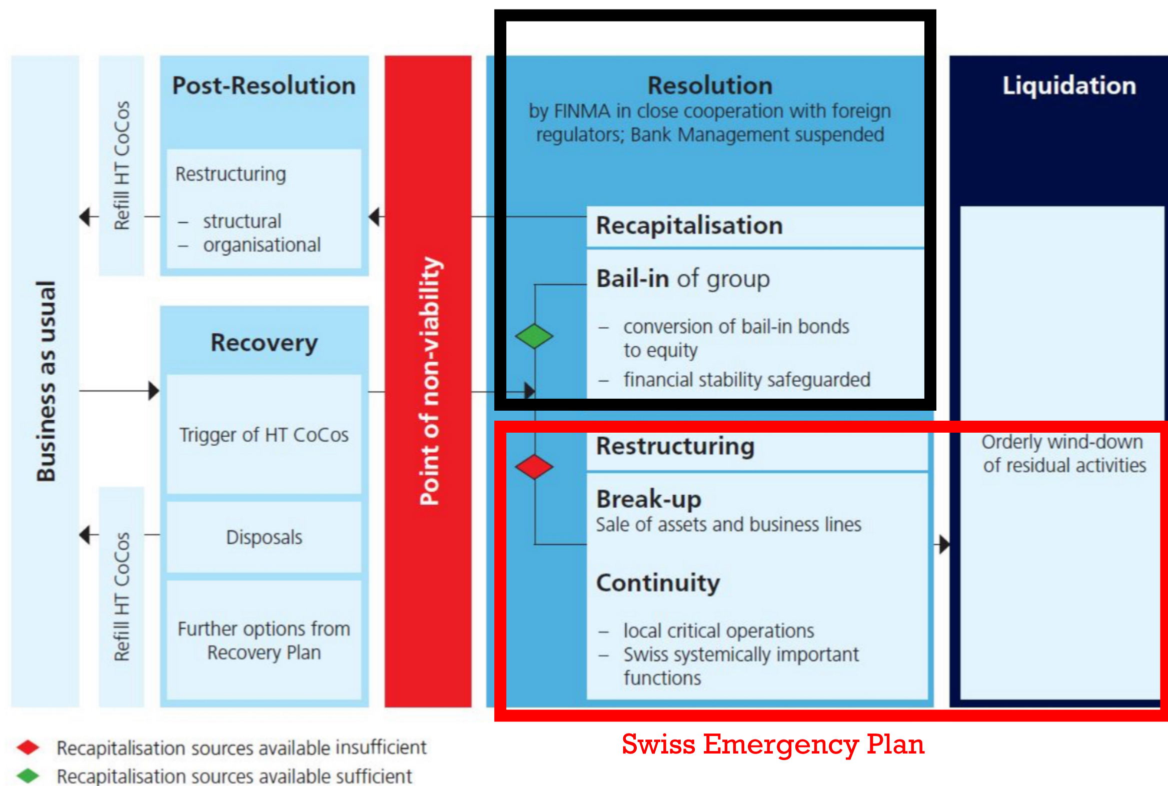
Credit Suisse was the first large scale stress test of the TBTF regime, but the solution chosen was not to go for a bail-in resolution and instead facilitate a distress merger with UBS. This raised questions whether the orderly resolution of a GSIB, which had been prepared over the last decade, would have worked in principle. Many commentors doubted that the TBTF framework could have been implemented and spoke of incalculable risks to financial stability. .

Certain voices declaring the failure of the TBTF framework appeared to be confused about the mechanism. In Switzerland, there is a widespread belief that resolution would entail saving only the Swiss components of Credit Suisse while placing its global segments into orderly wind-down. However, this is the Swiss Emergency Plan, to be considered only as a last resort if the bail-in resolution and restructuring efforts all faltered. Instead, the resolution option under consideration involved bailing-in TLAC, (see Figure 4, resolution top), a fundamentally distinct approach from the Swiss Emergency Plan. Unfortunately, this misconception persists widely. Additionally, many market participants also appear to have misunderstood the distinction between bail-in bonds and AT1s, leading to surprise.

What would have happened if the resolution regime would have been applied? On Sunday FINMA would have :

1. declared the Point of Non-Viability (PONV), assumed control, appointed a new chairman;
2. written down all equity and High trigger CoCos (AT1 , about 16 bn USD);
3. ordered the write down and conversion of remaining TLAC (about 50 bn) into equity;
4. communicated with the crisis management group, i.e. supervisors in other jurisdictions, which had been involved in the preparation;
5. eventually, endorsed on a new strategy, restructuring, disposal of parts or sale.

Figure 4: Swiss recovery and resolution Regime for GSIBs



Source: FINMA

As a result, on Monday, March 20th, a "New Credit Suisse" would have been born with by an equity ratio of approximately 40 percent and the appointment of a new chairman of the board. The fresh leadership would have possessed ample capital reserves to allocate towards recovery and strategic shifts. Nevertheless, there remained a risk that this revamped Credit

Suisse would continue to haemorrhage, with depositors persisting in their withdrawals, and insufficient time available to rebuild trust. Hence, the bail-in solution would also have necessitated the implementation of a robust liquidity backstop. .

Moreover, there loomed the peril of contagion stemming from what would have been the largest bail-in to date, of around 70 billion. Assessing the magnitude of possible contagion risk will remain challenging—it was the path not chosen.

On one hand, the contagion could have been substantial, primarily due to investors' lack of anticipation regarding the bail-in (as discussed below). Even the smaller AT1 bail-in (amounting to 16 billion) incited significant market turbulence in European AT1 markets, sparking rumours that "Deutsche Bank would be next." On the Friday after the resolution weekend the CDS of Deutsche came under pressure and the German Chancellor deemed it necessary to intervene verbally on its behalf.

On the other hand, many market participants contended that contagion resulting from the bail-in would have been contained, given that Credit Suisse's was an idiosyncratic case. Lacking a counterfactual it cannot ever be known if a bail-in resolution could have stabilized Credit Suisse and/or if it would have triggered contagion and financial instability across the broader system. Ultimately, the bail-in was not selected because authorities had a less risky alternative available – and they were right do so.

But a less risky option may not always be available. So the first lesson is that bail-in resolution has to be robust and a second lesson is the need for a more stringent recovery regime.

III. Lessons for the TBTF Framework

1. Robustness and credibility of the "end game"

The members of the crisis management group were confident that a bail-in resolution could have been implemented. These were the findings of the Swiss Expert group (Egger et al 2023) and they were echoed by the FSB review (FSB 2023 p5): *"This review did not identify any*

material remaining obstacles to resolution, which suggests a close consideration of how outcomes might have differed if Credit Suisse had undergone the Single Point of Entry (SPE) resolution prepared by home and host authority members of the Crisis Management Group (CMG)."

However, substantial obstacles had to be dealt with on an ad-hoc basis. A liquidity backstop was not in place and had to be implemented with emergency law; legal uncertainty around bail-in instruments had to mitigated bilaterally with SEC – without achieving full certainty. Moreover, it became evident that an open bank bail-in over a weekend is a very complex and challenging process and that increasing the number of resolution options may be desirable.

Fixing all of these issues is a precondition of a more credible and robust end-game:

Legal certainty for bail-in

An open bank bail-in, involving the conversion of bail-in bonds into equity over a weekend may face legal challenges, which may not have been sufficiently appreciated before the case of Credit Suisse became acute.

A formidable obstacle was the SEC because US investors held bail-in bonds issued by Credit Suisse and US securities laws apply to any securities held by US investors. Under US law, all offers and sales of securities must either be registered or exempt from registration. The conversion of Credit Suisse's bail-in-bonds to equity would have constituted a sale, thus necessitating registration or an exemption. Registration involves filing a registration statement with the SEC, accompanied by comprehensive disclosures, and updated financial statements which will be virtually impossible to supply over a weekend and in the middle of a bank run. Registration typically takes months. Alternatively, issuers could seek exemptions form the SEC. However, according to SEC staff, the financial institution bears the burden of proving qualification for exemption. The SEC will not provide ex-ante comfort – even if the US council of the firm provides a positive legal opinion. The SEC retains the discretion to disagree and evaluate the case when it happens.

This seriously challenges the feasibility of an open-bank bail-in. Imagine the chaos if FINMA had announced the bail-in resolution on a Sunday evening, only for the SEC to state on Monday morning (NY time) that it required additional time to review the file and couldn't guarantee granting an exemption. In the case of Credit Suisse, FINMA had dedicated months to preparation and had engaged the SEC in the crisis management group to get sufficient confidence that the SEC would have played along. However, the issue remains unresolved if not all jurisdictions offer the requisite legal certainty to make a bail-in credible.

Ensuring legal certainty of foreign bail-in in all relevant jurisdictions is therefore a crucial task for the FSB. It requires a process through which all relevant jurisdictions can provide ex-ante assurance that they will accept foreign bail-in and enforce conversion of bail-in bonds immediately.

Funding in resolution – Public Liquidity Backstop

There is little doubt that the lender of last resort (LOLR) role represents a necessary condition of financial stability and in most countries it is also a cornerstone of central bank's mandate. Central banks uniquely possess the ability to create liquid assets in the form of central bank reserves and to inject liquidity swiftly into the financial system.

The LOLR role is also the most controversial of central bank functions for several reasons:[11] The primary concerns is the potential for moral hazard: By offering a safety net to troubled institutions, central banks risk may incentivizing reckless behaviour, which may undermine market discipline and pose long-term systemic risks. Furthermore, the LOLR function exposes central banks to financial risks. Extended or excessive liquidity support can strain the central bank's balance sheet, potentially leading to financial losses. Moreover, the provision of liquidity assistance blurs the boundary between monetary and fiscal policy, raising questions about the appropriate roles and responsibilities of central banks versus governments in managing economic crises. Finally, offering liquidity assistance to individual institutions can carry reputation risks for central banks. Such interventions are met with

[11] See eg. BIS 2014

public scrutiny and criticism, as they may be perceived as favoring certain institutions over others or as bailing out irresponsible behavior.

Overall, while the LOLR function is essential for maintaining financial stability and preventing systemic crises, it is fraught with challenges and controversies. Thus, central banks will tend to err on the side of caution in extending emergency liquidity and defining conditions narrowly and intervening to "too little, too late".

At the same time, a credibly commitment to provide sufficient funding is key for the success of any resolution. One of the central lessons from CS is that liquidity and funding in resolution needs to be in place and it may be very large. In resolution, a "wall of liquidity" has to discourage depositors from withdrawals or to contain an ongoing run. The lender of last resort should be prepared to extend emergency liquidity assistance against a wide range of collateral and have the ability to mobilize liquidity in foreign currency at short notice. This requires a fiscal backstop to insure the central bank against losses and to separate the monetary and fiscal functions. A public liquidity backstop, however, is not popular because it explicitly exposes the taxpayer. Switzerland instituted at PLB via emergency law and is now enshrining it in regular law. However, credible solutions for funding in resolution are currently lacking in many jurisdictions hosting GSIBs.

Optionality and communication in resolution

As open bank resolution must be swiftly executed, typically over a weekend, it inherently restricts the range of viable options available. For instance, while a merger or partial sale of distressed institution assets might be preferable to a bail-in, such strategies often necessitate more time for negotiation and implementation. Introducing a bridge bank, under the control of the resolution authority, could potentially introduce additional avenues for resolution.

Assessing the resolvability of Global Systemically Important Banks (GSIBs) requires collaboration with all relevant stakeholders. The crisis management committee appears to have worked well in the case of CS. However, it only collect the main jurisdictions in which the bank has mayor presences, the US, the UK and Switzerland in this case.

Given the multinational presence of GSIBs, multiple jurisdictions are invariably implicated in their resolution and indirect contagion may also be of concern in countries that are only host so smaller part of the bank. For instance, Credit Suisse did not have a large presence in Europe (ex UK) and the European authorities were not included in the crisis management committee although clearly, they would be at the forefront of any fallout. Thus, the communication, regular testing, and discussion of resolvability of GSIBs should include all relevant authorities and political decision-makers.

Moreover, it is fair to assume that outside the circle of supervisors and regulators most political decision makers, commentators and certainly the wider public do not understand the mechanism of bail-in resolution. As mentioned above, even in Switzerland, deep misunderstandings about bail-in resolution still persist – resolution it is routinely confused with bankruptcy. Educating the public and decision makers on the mechanisms and implications of bail-in regulations seems key and would enhance understanding and support for resolution measures.

2. A special recovery regime

A GSIB resolution will always be challenging and somewhat risky, which is why the emphasis should be placed more on the recovery phase. In principle, GSIBs are required to prepare recovery options such as divestment or refraining from calling or paying interest on AT1 instruments. Supervisors typically possess tools to enforce these recovery options.

However, both the firm and supervisors may hesitate to trigger these options due to concerns about sparking a run. A public warning from the supervisor could be interpreted negatively—markets and clients may perceive the bank as much more vulnerable than previously believed, potentially accelerating the crisis. Fear of causing a run and fear of legal challenge will loom large on early intervention decisions thus supervisors may also face the problem of time inconsistency (ex-ante the promise it to be hard, when the critical moment comes the choice is to be flexible). These incentives will tend to result in intervention that are too-little-too-late, also called “regulatory forbearance".

For similar reasons, management may also be incentivized to wait and "gamble for resurrection" rather than triggering recovery options. An example is the voluntary calling of AT1 by CS in a precarious situation: In June 2022, it called a USD 1.5 billion AT1 instrument for redemption on the first call date and issued a new instrument for USD 1.65 billion, with a coupon of 9.75%, significantly higher (see FINMA 2023 p. 32).

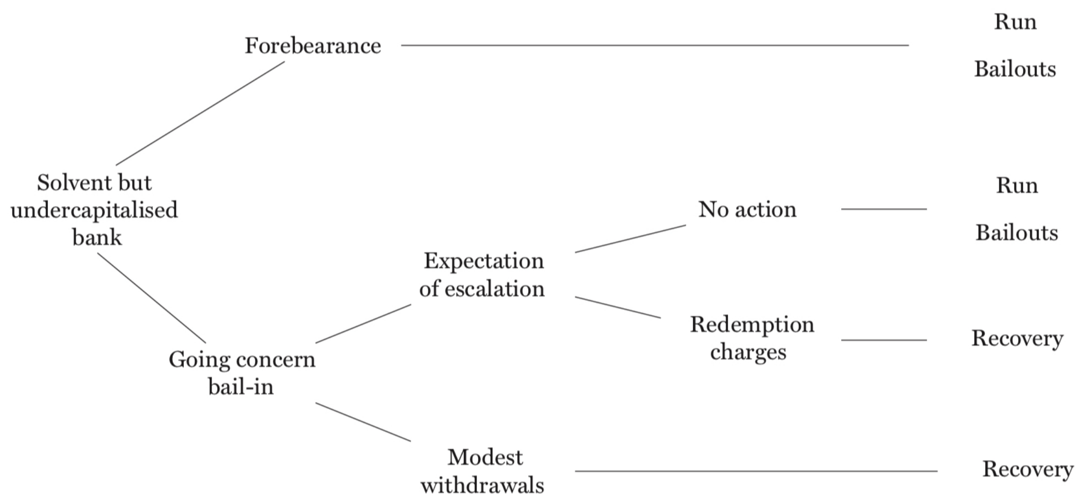
A special recovery regime as described in Figure 5 (taken form Perotti and Martino 2024) can help overcome this dynamic. It should have the following elements:

Effective Triggers: To counter time inconsistency, the activation of the special recovery regime should occur automatically, triggered by a clearly defined set of indicators, and should allow minimal room for supervisory discretion. While capital should serve as the primary trigger, secondary indicators covering other vulnerabilities could include market-based metrics or significant liquidity events. These triggers should be widely observable by markets to ensure credibility. The supervisor may have the option to override the activation but would then have to provide an explanation as to why the triggers were not adequate for the specific case.

Empowered Supervisors: In the recovery regime, supervisors should possess intervention powers that surpass those available in normal circumstances. These powers may include the ability to suspend calls on Additional Tier 1 (AT1) instruments and halt interest payments, or even order a bail-in. Ensuring the long-term viability of the bank often requires addressing deficiencies in its management. Supervisors should have the authority to take all necessary actions, including potentially altering management or board composition, to rectify flaws and ensure the bank's stability in the future.

Risk Mitigation Mechanisms: Since, the activation of the recovery regime may lead to withdrawal of deposits, measures to mitigate the risk of runs and minimize their impact if they do occur is crucial. This includes establishing mechanisms that automatically intervene to stabilize the situation and restore confidence in the bank's operations in the event of a run, and might also include redemption charges, as suggested by Perotti and Martino 2024.

Figure 5: A special GSIB recovery regime



Source: Perotti and Martino 2024

Credible activation triggers are essential for prompting supervisory intervention and incentivizing management to take pre-emptive action. Table 2 shows the different approaches to this problem in the US and Europe. The US Prompt Corrective Action (PCA) regime features clearly observable triggers and mandatory interventions. However, a drawback is that these triggers are solely linked to capital requirements, rendering them ineffective in cases like Credit Suisse. In contrast, the European Early Intervention Mechanism (EIM) encompasses a broader range of triggers, including "significant events," which would have been relevant in the case of CS. The challenge with this expanded set of indicators is that it introduces more discretion for supervisors, potentially leading to suboptimal outcomes. Ultimately, this dilemma reflects the classic trade-off between rules and discretion: a rule may be credible but could be "exactly wrong," while a complex indicator may be "correct" but less constraining.

Table 2: Tiggers for Activation of the Special Regime

Countries	United States	European Union
Date (last revisions)	1991 (2013)	2014
Capital triggers	TCAR, Tier 1 R, CET1 R, Lev ratio, tangible equity ratio, SLR	Yes through anomalies in indicators and breach of thresholds
Asset quality-based triggers	No	No
Ratings-based	No	Yes, composite SREP = 4 or combinations (composite 3, component 4)
Other triggers	No	Material changes, anomalies in indicators, significant events

Source: ©

AT1 recapitalization in going concern

In principle, for AT1 instruments to qualify as equity, they should be perpetuals with voluntary call-back options and interest payments. Ideally, a distressed bank would take advantage of this by reducing interest payments and refraining from calling the instruments at their earliest maturity, aligning with the equity nature of AT1s. However, in practice, markets anticipate early repayment and interest payments, treating AT1 more akin to high-yield bonds. Consequently, even a bank facing capital pressure tends to avoid using the AT1 capital buffer.

As previously mentioned, Credit Suisse (CS) adhered to these market expectations, consistently recalling AT1 instruments and replacing them with new issuances to maintain market confidence, even during loss-making years. Despite reducing shareholder dividends, CS ensured interest payments on AT1 instruments out of concern for market stability and

investor trust. Consequently, the refinancing of AT1 became one of the procyclical elements in the decline of Credit Suisse.

AT1 instruments are intended to provide recapitalization in going concern. For this reason, Swiss AT1s were issued with two trigger points that would allow write-down before the point of non-viability (PONV) in the event of state support (see Appendix II). The outcry when CS's AT1 instruments were bailed in suggests two things:

First, many investors were not aware of these contractual clauses, which is surprising since AT1s were only sold to qualified investors who should have been able to assess the risk of a convertible. Alternatively, they may have been aware of the instrument's risk but assumed that the government would intervene, potentially indicating a case of moral hazard.

Second, regulators in Europe were also surprised by the bail-in outside of a resolution, where shareholders would have been wiped out. This is possibly because European AT1 instruments tend to have low capital triggers and would only be converted in a resolution.

Overall, AT1 instruments are plagued with a number of information and incentive problems and warrant serious reconsideration. At a minimum, AT1s should be standardized across different jurisdictions and designed to serve as recapitalization instruments in going concern scenarios. Also, supervisors should be empowered to write down or convert AT1 within a special recovery regime as a as outlined above.

Intragroup allocation and recovery options

The location of capital within a global banking group should be irrelevant as long as it can be readily transferred to where it's needed. However, in the practice of the hybrid SPE model, capital is not entirely fungible and often becomes "trapped" within various entities of the group. This situation partly stems from the negative experiences host countries endured during the Global Financial Crisis (GFC), where many resorted to ring-fencing measures to safeguard their assets, imposing restrictions on capital movements and liquidity. These experiences have left lasting scars and fostered lingering mistrust of foreign supervisors.

Furthermore, certain financial center countries, notably the US and UK, have implemented a form of "ex ante ring-fencing" by requiring global banks to organize their local operations into subsidiaries subject to local capital requirements. These subsidiaries have boards mandated to act in the interests of the local subsidiary. Another deviation from the global optimum is the requirement imposed by various jurisdictions for the "prepositioning" of capital in their local entities and the imposition of limits on capital upstreaming.

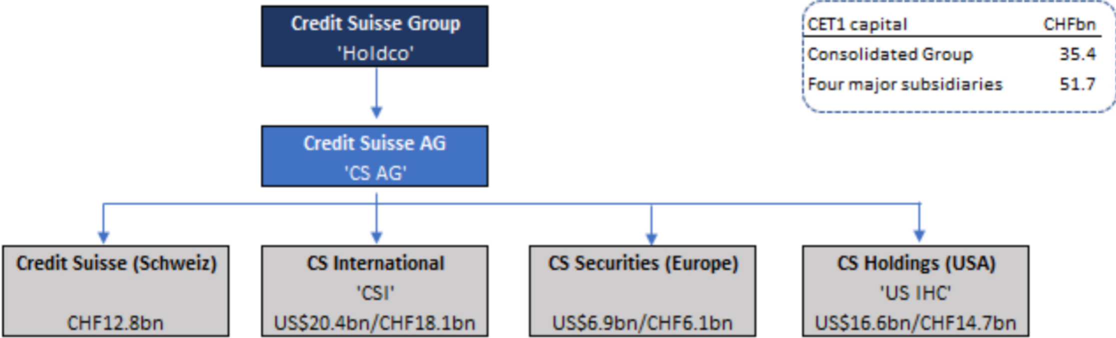
Consequently, even though capital may be adequate at the group level it may not accurately reflect the capital available at the entity where it's needed most. In the case of Credit Suisse the entity in need of capital was the Parent Bank, Credit Suisse AG.

Market participants had discovered the problems in the structure of capital and raised doubts about the availability of capital at the right place, in the parent bank. For example Autonomous, a market research firm issued a report on Credit Suisse titled "less than meet the eye".[12] In addition to fears about „trapped capital" that would limit the dividend capacity of the parent bank they raised concerns about the complex structure of Credit Suisse, with its significant capital held in ring-fenced subsidiaries, presents challenges in meeting both local and consolidated group-level prudential requirements. The CS capital structure, as depicted in Figure 6, illustrates that capital was concentrated in subsidiaries, leaving the upper levels of the group with thinner capitalization. Notably, the substantial CET1 capital reported by major subsidiaries in Switzerland, the UK, and the US, surpasses the consolidated group capital, indicating significant double leverage.

The FINMA report (2023) also stressed that Credit Suisse consistently met all regulatory capital requirements at the group level but while there were persistent capital strains at the parent bank level. The bank had to repeatedly turn to capital markets to secure additional equity—totalling over CHF 20 billion in the past decade—to mitigate losses and cover restructuring costs. This continual requirement for capital injections, combined with shifts in management and strategy, gradually undermined shareholders' confidence in the bank.

[12] See Autonomous (2021)

Figure 6: Distribution of CET1 capital by major legal entities (as of Dec 2020)



Source: Autonomous (2021)

The most recent report of the Swiss Federal Council (2024) zeroed in on parent bank capital. It stresses that the capitalization of the parent bank was key in limiting the recovery options Credit Suisse could deploy and recommends that capital requirements at the parent bank of GSIBs (i.e. of UBS) should be increased. Initial estimates by analysis seem to suggest that this could mean that UBS would have to build up between 15 and 25bn in additional capital.

In the light of the discussion above, addressing intragroup issues in capital structure should be part of a reform package that increases strategic options in recovery. However, they should include all elements that lead to procyclicality in stress and to limiting fungibility of capital and liquidity across borders.

IV. Conclusions

This paper argues that the focus of TBTF reforms should be on establishing the necessary conditions to ensure that the risks of a failing GSIB do not fall on taxpayers. This requires, at a minimum, making bail-in feasible and robust. Resolution needs to be a credible endgame. Ideally, the endgame is never tested, but this necessitates strengthening the powers and obligations of supervisors for early intervention. This could be achieved through the implementation of a special GSIB early recovery regime, equipped with a set of triggers, mandatory activation, and comprehensive intervention powers of supervisors.

References

Admati, A., & Hellwig, M. (2013). The bankers' new clothes: What's wrong with banking and what to do about it. Princeton University Press. http://www.jstor.org/stable/j.ctt1r2dn0

Angeloni, I., Claessens, S., Seru, A., Steffen, S., Weder di Mauro, B., 2024 Geneva Report. Much Money, Little Capital, and Few Reforms: The 2023 Banking Turmoil, CEPR Press (forthcoming)

Bank for International Settlements. (2014). Re-thinking the lender of last resort [BIS Papers No. 79, September 2014].

Credit Suisse. (2021). Group special committee of the board of directors report on Archegos Capital Management. July 29, 2021. https://www.credit-suisse.com/about-us/en/reports-research/archegos-info-kit.html

Credit Suisse Group AG. (2022). U.S.$1,650,000,000 9.750 per cent. Perpetual Tier 1 Contingent Write-down Capital Notes.

Eggen, M., Gerspach, H., Hüpkes, E., Jaisli, E., Lengwiler, Y., de Planta, R., Sigg, R., & Weder di Mauro, B. (2023). The need for reform after the demise of Credit Suisse. Retrieved from https://too-big-to-fail.ch/en_US/report/

Faia, E., Weder di Mauro, B., & Weder di Mauro, B. (2016). Cross-border resolution of global banks: Bail in under single point of entry versus multiple points of entry. CEPR Discussion Paper No. DP11171.

FINMA. (2023). Lessons learned from Credit Suisse. Bern December 2023.

Financial Stability Board. (2011). Key Attributes of Effective Resolution Regimes for Financial Institutions. https://www.fsb.org/wp-content/uploads/r_111104cc.pdf

Financial Stability Board. (2023). Bank failures, preliminary lessons learnt for resolution. October 10, 2023.

Financial Stability Board. (2021). Evaluation of the TBTF reforms. https://www.fsb.org/wp-content/uploads/P010421-1.pdf

König , Elke (2021): Single Point of Entry - a resolution strategy addressing the home – host issue in Europe's Banking Union, Single Resolution Board, SRB Blog, 22 April 2021, https://www.srb.europa.eu/en/content/single-point-entry-resolution-strategy-addressing-home-host-issue-europes-banking-union

Lengwyler and Weder di Mauro (2023). Global Lessons from the Demise of CS, VoxEU https://cepr.org/voxeu/columns/global-lessons-demise-credit-suisse

Perotti, E and E Martino (2024). Policy Insight 127: Containing runs on solvent banks: Prioritising recovery over resolution, CEPR Policy Insight No 127, CEPR Press, Paris & London. https://cepr.org/publications/policy-insight-127-containing-runs-solvent-banks-prioritising-recovery-over-resolution

Svornos, J. P (2018). Early Intervention Regimes for Weak Banks, Financial Stability Institute, FSI Insights No 6. https://www.bis.org/fsi/publ/insights6.pdf

Swiss National Bank. (2023). Financial Stability Report, https://www.snb.ch/de/publications/financial-stability-report/2023/stabrep_2023

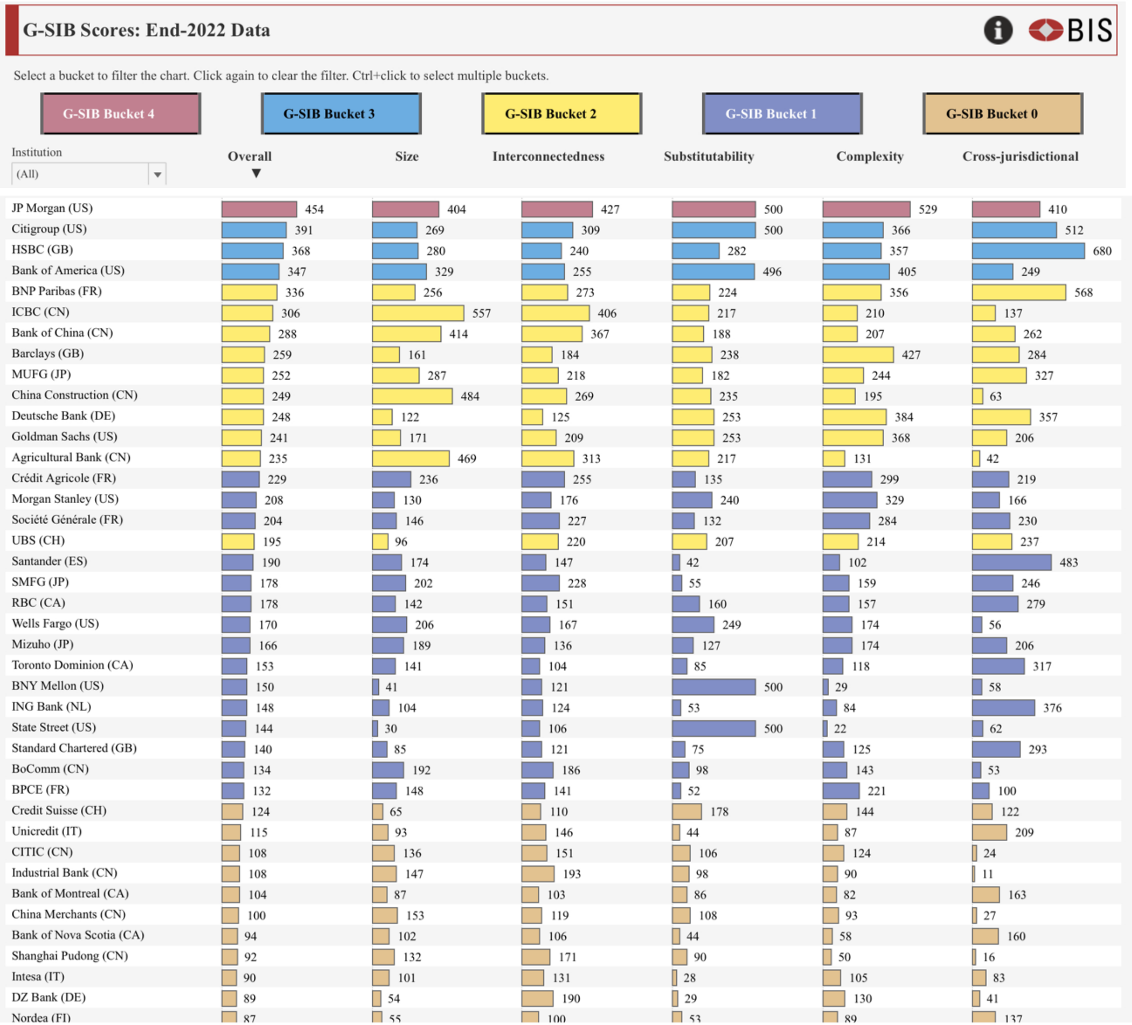
Swiss Federal Council. (2024). Report on banking stability, April 2024.

Stolz, S., & Wedow, M. (2013). Keeping banks afloat: Public lifelines during the financial crisis.

Turner, D., & Ollivaud, P. (2019). The output cost of the global financial crisis: A reappraisal after ten years [SUERF Policy Note No. 53].

APPENDIX I : BIS- GSIB classification

Systemic importance extends beyond mere balance sheet size. Smaller banks can still pose systemic risks if they are (1) highly interconnected with other financial institutions, (2) possess complex structures, (3) as difficult to substitute e.g because they control critical parts of the payment's infrastructure, (4) or have significant cross-border activities. Consequently, the Basel Committee assesses the systemic importance of Global Systemically Important Banks (G-SIBs) using an indicator-based approach, which considers these five dimensions. Banks are then assigned to buckets (0-4) and required to hold additional going concern capital ranging from 1 to 3.5 percentage points. Note that as of end 2022- UBS was bucket in bucket 2 (not due to size be complexity, substitutionally and cross-jurisdictional criteria) whereas Credit Suisse was in the lowest bucket.



ource: BIS GIB Dashboard https://www.bis.org/bcbs/gsib/

APPENDIX II : AT1 Prospectus Credit Suisse (2022)

The terms of a write-down were explicitly outlined in the prospectus of the AT1 bonds issued by Credit Suisse in 2022. They would undergo a write-down if the equity ratio dropped below 7% or in the event of a viability event, such as government intervention to stabilize the bank. Below is an excerpt from the prospectus text (CS 2022 p. 5, emphasis added):

> *"Following the occurrence of a Write-down Event, a Write- down will occur and the full principal amount of the Notes will automatically and permanently be written-down to zero on the Write-down Date. (:..)*
>
> *A "**Contingency Event**" will occur if CSG (or any Substitute Issuer) gives Holders a Contingency Event Notice. CSG (or any Substitute Issuer) is required to give Holders a Contingency Event Notice (within the required notice period) if as at any Reporting Date, the CET1 Ratio contained in the relevant Financial Report is **below 7.00 per cent**.*
>
> *A "**Viability Event**" will occur if prior to a Statutory Loss Absorption Date (if any) either:*
>
> *(a) the Regulator has notified CSG that it has determined that a write-down of the Notes, together with the conversion or write-down/off of holders' claims in respect of any and all other Going Concern Capital Instruments, Tier 1 Instruments and Tier 2 Instruments that, pursuant to their terms or by operation of law, are capable of being converted into equity or written down/off at that time is, because customary measures to improve CSG's capital adequacy are at the time inadequate or unfeasible, an essential requirement to prevent CSG from becoming insolvent, bankrupt or unable to pay a material part of its debts as they fall due, or from ceasing to carry on its business; or*
>
> *(b) customary measures to improve CSG's capital adequacy being at the time inadequate or unfeasible, CSG has **received an irrevocable commitment of extraordinary support from the Public Sector** (beyond customary transactions and arrangements in the ordinary course) that has, or imminently will have, the effect of improving CSG's capital adequacy and without which, in the determination of the Regulator, CSG would have become insolvent, bankrupt, unable to pay a material part of its debts as they fall due or unable to carry on its business. «*