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Revisiting the regulatory capital stack

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Revisiting the regulatory capital stack^{1, 2}

Highlights

- *The post-Great Financial Crisis regulatory reforms have directly contributed to a more resilient financial system and supported sustainable growth, but some concrete aspects can be improved.*
- *The complexity of the current capital framework and limitations in the loss-absorbing capacity of some of its components can limit the effectiveness of bank regulation in achieving core microprudential, macroprudential and resolution objectives.*
- *This paper discusses conceptually the capital stack – its components and their distinct roles. It then suggests, at a technical level, how to simplify the current capital framework and how to enhance its effectiveness in generating loss-absorbing resources while maintaining its stringency.*
- *Ultimately, the aim of this paper is to provide an analytical reference for the ongoing debate on how to improve the effectiveness and reduce the complexity of the current regulatory capital stack.*

1. Introduction

The capital stack is the bedrock of banking regulation, serving multiple policy objectives. From a microprudential perspective, it seeks to safeguard the safety and soundness of individual banks. From a macroprudential standpoint, it strengthens the resilience of the financial system, moderates the amplitude of the financial cycle and helps to reduce the likelihood that shocks propagate. In addition, parts of the capital stack absorb losses to facilitate the orderly resolution of failing banks.

Since the Great Financial Crisis (GFC), the capital – as well as liquidity – positions of banks have improved significantly, and the banking sector's enhanced resilience has supported sustainable economic growth. The aftermath of the Covid-19 crisis is a testament to banks' resilience. In contrast to 2008, when banks were the source of vulnerabilities, the Basel III reform underpinned their role as a shock absorber during the pandemic (BCBS (2021)). In addition, assessments of the long-term effects indicate that greater resilience did not come at the expense of banks' cost of capital and that the reforms did not impair the aggregate supply of credit to the economy (BCBS (2022)).

That said, a debate has emerged on possible ways to improve the current design of the regulatory capital stack. While the available evidence does not suggest that this is an urgent task, there appears to be scope to improve some technical aspects of the current framework.

For one, the multifaceted nature of the capital stack introduces undesirable complexity. Banks must comply with several interlocking requirements, including those for Common Equity Tier 1 (CET1) capital, Tier 1 capital, total capital, various regulatory buffers, total loss-absorbing capacity (TLAC) and the leverage ratio. To be sure, some of this complexity is necessary; but some is counterproductive and avoidable. In practice, assessing the relative stringency of these capital requirements can become quite

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² The views expressed in this publication are those of the authors and do not necessarily reflect the views of the BIS, its member central banks or the Basel-based standard-setting bodies.

difficult, and even just calculating them can become burdensome. The complexity thus creates challenges not only for banks but also for investors, observers and even supervisors, potentially undermining the effectiveness of the prudential framework. At the heart of these challenges is an imperfect alignment between the various objectives of the framework and the elements of the capital stack.

Moreover, and in part because of its complexity, the framework faces challenges in delivering on its core purpose of loss absorption. Notably, while a bank needs to meet several minimum requirements to be considered viable, instruments eligible for some of these requirements need not improve the bank's viability. Conversely, instruments that do underpin viability can also meet requirements for resolution, introducing possible inconsistencies in the framework. Further, while CET1 capital has been highly effective in absorbing losses on a going-concern basis, Additional Tier 1 (AT1) instruments have exhibited limitations, notably in periods of financial stress. And "usable" buffers have proven insufficient, especially in the face of exogenous – and thus inherently unpredictable – shocks, such as the Covid-19 crisis.

These limitations raise questions about the current design of the capital stack. To what extent is it helping the regulatory framework to achieve its diverse objectives? Could these be met in a more streamlined and efficient manner? These questions underscore the usefulness of a critical evaluation of the capital stack's design.

This paper seeks to contribute to this important debate. Based on an evaluation of the current capital stack, it analyses how to strike a better balance between functionality and simplicity. Importantly, the paper does not suggest any weakening of the current framework – not least because the available evidence does not call for it.

While the evaluation is broad, some important regulatory aspects are out of scope. First, the analysis does not cover in any depth jurisdiction-specific arrangements (eg as laid out in Pillar 2 of Basel III). The focus is on international standards and common elements across jurisdictions. Second, by concentrating on requirements in terms of risk-weighted ratios, the analysis leaves the leverage ratio in the background. It takes it for granted that it is appropriate to rely on a leverage ratio as a backstop to the limitations of risk weights. Third, the paper does not cover coordination issues among authorities – ie those with microprudential mandates, those with macroprudential mandates and those in charge of resolution. That said, the suggested simplification can facilitate coordination. Finally, while the paper touches on issues related to the calibration of the framework, its primary focus is on the overall structure of the capital stack, leaving the quantification of its components for future analysis.

The rest of the paper proceeds as follows. Section 2 offers a general analytical framework that lays out the objectives of the capital stack and maps the functions of its components to various conditions in which a bank or the banking system may find itself ("states"). Building on this analysis, section 3 assesses current arrangements, and section 4 puts forward ideas on how to improve them. Section 5 concludes.

2. The capital stack: policy objectives and functions across states

The capital stack and its various components serve three interconnected objectives. When a bank remains a going concern, the components of the stack serve microprudential and macroprudential objectives. When a bank becomes a gone concern, they play a critical role in facilitating an orderly resolution.³ Achieving these objectives contributes to the overarching aim of safeguarding financial stability.

³ The terms "going concern" and "gone concern" originate in auditing. "Going concern" refers to an entity's ability to continue its operations for the foreseeable future (typically over 12 months from the reporting date) without requiring liquidation or major restructuring. In contrast, "gone concern" means that the entity is no longer viable as a going concern, indicating an expectation of business cessation, asset liquidation or significant restructuring due to financial or operational challenges.

To better understand the implications for the design of the capital stack, we proceed in two steps. We first examine the three policy objectives in more detail. We then consider the role of the elements of the stack across various states (ie as risks and losses evolve in the “time dimension”) and across institutions of different systemic significance (the “cross-sectional dimension”).

2.1 Policy objectives

Microprudential and macroprudential objectives⁴

Regardless of whether the perspective is micro- or macroprudential, the goal of the capital stack is to ensure sufficient loss-absorbing capacity for the bank to continue operating – ie to remain a going concern – even under adverse conditions.⁵ The two perspectives differ in terms of *how* they treat banks. While the microprudential perspective treats banks *on a stand-alone basis*, its macroprudential counterpart treats them explicitly *as part of a system*. Accordingly, the two perspectives underpin different roles of the capital stack in both the time and cross-sectional dimensions.

In the time dimension, a key difference is whether risks and losses are regarded as independent of the collective behaviour of institutions or as influenced by it. The microprudential perspective ignores feedback;⁶ the macroprudential one puts it front and centre. Banks’ collective retrenchment, through asset fire sales and credit cutbacks, can make them worse off as a group by amplifying costs for the financial system and for the real economy (a “fallacy of composition”). Hence, to address a scenario in which system-wide losses mount (or threaten to mount), the macroprudential perspective highlights the need for loss-absorbing capacity *in a form suitable to limit retrenchment*.⁷ By ignoring feedback, the microprudential perspective omits these considerations. Thus, it emphasises the need to conserve, rather than draw on, loss-absorbing capacity in times of stress.

In the cross-sectional dimension, the two perspectives differ in the need to tailor the capital stack to the systemic significance of individual banks. The microprudential perspective ignores this need. By contrast, the macroprudential perspective calls for loss-absorbing capacity commensurate with a bank’s contribution to system-wide risk, or its “systemic footprint”. For instance, all else equal, the macroprudential perspective calls for extra loss-absorbing capacity for banks that account for a larger share of the financial system.⁸

Orderly resolution objective⁹

A bank is considered a gone concern when the relevant authority determines that it is failing or is likely to reach the point of non-viability (PoNV) – ie the point where the bank can no longer continue operating without a significant public intervention.¹⁰ In this state, the capital stack continues to absorb losses, mainly

⁴ For an elaboration of the distinction between the microprudential and macroprudential perspectives, see Borio (2003).

⁵ Out of scope is another key role of the capital stack: steering the risk-taking incentives of the institution.

⁶ In practice, actual microprudential tools may indirectly account for some feedback effects even when not explicitly designed to do so. For example, this would be the case if the parameters used to calibrate risk weights are based on historical downturns.

⁷ This is the issue of the so-called “usability” of the buffers (see also Section 2.2 below).

⁸ See eg Tarashev et al (2016).

⁹ In the time dimension, a system-wide perspective in resolution calls for approaches to systemic crisis management that limit the impact on the economy. This aspect, however, falls outside the scope of this paper.

¹⁰ A bank is considered a going concern if it has not reached the point of non-viability; otherwise, it is classified as a gone concern.

to enable the orderly management of the bank's failure, hereafter referred to as "resolution".¹¹ This reduces the cost of the failure for creditors, for the financial system and for taxpayers.

The specific role of the loss-absorbing resources for a gone concern depends on the resolution strategy. In a *regular liquidation procedure*, loss absorbency helps protect depositors, thereby mitigating the risk that authorities need to bail out the bank – with taxpayer money – for political economy reasons. In *transfer resolutions*, loss-absorbing liabilities increase the chances of finding suitable acquirers to take over a failing bank's assets and remaining liabilities (eg deposits).¹² Finally, in a *bail-in strategy*, loss-absorbing liabilities ultimately generate capital that allows the bank to maintain its critical functions after resolution. Since a bail-in strategy aims to preserve all or substantially all of the failed banks' operations, the attendant loss-absorbency needs are typically higher than for a transfer and, especially, for liquidation.¹³

In parallel with the cross-sectional dimension of prudential objectives, orderly resolution calls for loss-absorbing resources that increase with the bank's systemic significance. Thus, these resources would need to increase more than proportionately with the bank's size. In a piecemeal asset liquidation, for instance, creditors' losses grow more than proportionately with the volumes involved. Non-linearities also apply to dismantling or transferring complex business lines or restoring them to viability. More generally, uncertainty about the likelihood of an orderly resolution is greater for more systemically significant banks – and so is the potential for contagion from a disorderly outcome – calling for a higher safety margin of resources. The systemic benefits are disproportionately greater if the bank is highly interconnected and/or provides services with few or no direct substitutes – as is particularly the case for global systemically important banks (G-SIBs).

2.2 Mapping between economic states and the capital stack

Understanding loss-absorbing capacity in the time dimension requires tracing in more detail how the role of the capital stack evolves as the bank moves across economic states. Only then is it possible to fully appreciate the difference between buffers and minima or between instruments along the stack, eg equity or junior debt.¹⁴ This contrasts with the cross-sectional dimension, for which the general principle is straightforward – loss absorption should be commensurate with the bank's systemic footprint, regardless of the state.

To fix ideas, consider the role that banks' resources should play in three highly stylised states in a simplified scenario.

State 1: A system-wide shock threatens to seriously weaken banks' loss absorbency, leading them to deleverage as a group. This retrenchment could further weaken the financial system, the economy and, in turn, the retrenching banks themselves.

In this state, the objective of loss-absorbing capacity is to limit the banks' retrenchment (a macroprudential objective). Thus, banks' management should be able to *voluntarily* "consume" loss-absorbing capacity without facing regulatory penalties. This is achieved with a regulatory requirement that

¹¹ The term "resolution" is used here with a slightly broader scope than in Financial Stability Board (FSB) standards, which specifically identify the preservation of failing banks' critical functions as the primary resolution objective. For further details, see the FSB's "[Key attributes of effective resolution regimes for financial institutions](#)".

¹² See Restoy (2023) for an elaboration.

¹³ In an open-bank bail-in, the failing institution is recapitalised and remains open while being restructured. In a closed-bank bail-in, the parent holding company is typically placed into receivership, and its subsidiaries, assets and certain liabilities are transferred to a bridge institution. This allows the subsidiaries to remain open during the resolution process. Both approaches aim to ensure the continuity of critical financial services.

¹⁴ Junior debt includes liabilities, such as AT1 and Tier 2 instruments, which are senior to CET1 capital but are subordinate to senior liabilities – such as deposits – in the hierarchy of claims during liquidation.

can be released – an “adjustable” or “releasable” buffer – to add to the resources freely available to management – the banks’ “management buffer”.¹⁵

State 2: *Bank-specific shocks materially weaken the loss absorbency of one or more banks.*

In this state, a regulatory capital requirement would seek to: (i) ensure that a bank absorbs losses while remaining a going concern; and (ii) prompt a swift replenishment of the loss-absorbing capacity (a microprudential objective). This objective is achieved with a regulatory buffer that can be dipped into but subject to penalties (“non-adjustable” or “fixed” buffer). In turn, the penalties can become progressively more stringent with the size of the dip and as the bank approaches the PoNV. For instance, in a light dip, the restrictions could provide *incentives* to recapitalise (eg limitations on distributions); in a heavy one, they could *require* the implementation of recovery measures. The specific penalties could be based on rules or left to authorities’ discretion, depending on the perceived pros and cons of the two strategies.¹⁶

State 3: *Recovery fails and the bank becomes non-viable.*

An orderly resolution rests on a two-pronged approach. First, a minimum capital requirement defines the PoNV, below which the bank is no longer considered viable and hence becomes a gone concern. At that point, the authority takes full control of the bank, which enters resolution;¹⁷ that is, the PoNV coincides with the point of entry into resolution (PoER). Second, an additional requirement aims to ensure sufficient loss-absorbing resources for an orderly resolution.

The distinct motivation for each prong of the approach underpins the *form* of the corresponding loss-absorbing resources. From a regulatory perspective, a viable bank is one that has enough equity capital to weather adverse shocks and honour all its debt – ie remain balance sheet solvent – with a probability not lower than a high target level.¹⁸ Thus, the loss-absorbing capacity that *defines* the PoNV – ie the amount of capital that just meets the target solvency probability – must take the form of equity.

By contrast, any *additional* requirement – ie resources earmarked for resolution – must be in a form *other than equity*. Otherwise, the target solvency probability would be exceeded – an internal inconsistency. However, the resources that this additional requirement generates must be *transformable* into equity, as they would be used – when equity capital is exhausted – to restore the bank’s viability (ie have capital *in excess of* the PoNV) or to transfer or liquidate (parts of) its balance sheet. *Debt* instruments that are junior to deposits are the obvious candidates for this role.¹⁹

The distinct motivations of the minimum and resolution-specific requirements also have implications for the *penalties* applied to breaches. In particular, the penalty for breaching the equity minimum that defines the PoNV is entry into resolution (the incumbent management loses control of the bank); the penalty for breaching the additional debt requirement *must* be weaker. After all, this requirement is not designed to keep the bank viable, but to be used only if the bank becomes non-viable. The requirement does not help to identify the PoNV but to ensure enough resources beyond the PoER. In principle, the penalties for breaching the minimum debt requirement could be relatively minor when the bank operates with plenty of equity capital – ie with a large management buffer – but should become increasingly stringent as the PoNV is approached. For instance, authorities could require the bank to

¹⁵ To address a potential sequence of systematic shocks, an adjustable buffer would be released in instalments. See Drehmann et al (2020).

¹⁶ For example, in the United States, a rule-based strategy based on multiple indicators that go beyond capital – Prompt Corrective Action (PCA) – has been in place for a long time.

¹⁷ See Dewatripont and Tirole (1994) for a highly stylised analysis of the role of authorities in the case of banks in comparison with that of creditors of a typical firm.

¹⁸ This definition of viability has underpinned the calibration of banks’ minimum capital requirements in Basel II and Basel III.

¹⁹ Protecting (retail) depositors, quite apart from being justified by their inability to effectively monitor the bank, also reduces the incentives to bail out the banks by using taxpayers’ resources.

develop and implement a credible plan to address the breach within a specified time frame, which shortens as equity capital approaches the PoNV.

As the analysis indicates, the two types of loss-absorbing resources – those defining the PoNV and the additional component earmarked for resolution – play similar but distinct roles. The equity that is not wiped out by the breach of the PoNV and all junior debt instruments are *available to be consumed in resolution*. In this sense, they are *gone concern capital*.²⁰ But the minimum equity capital requirement is also intended to *ensure the viability of the bank* in the first place. In this sense, it could be regarded as *going concern capital*.²¹

In contrast to the stylised scenario this section has sketched out, a minimum requirement does not fully pin down the PoNV in reality. One single number cannot be up to the task. This is all the more so if that number is based on accounting approaches that are not sufficiently forward-looking. In some cases, for instance, market participants may take the view that the bank is not viable even when it operates well above the minimum, thereby cutting off its market access and starving it of the cash flow that would keep it afloat (a liquidity crisis). In such an environment, or if they independently reach the view that the bank is “likely to fail”, authorities will trigger resolution when the institution is still meeting minimum capital requirements.^{22, 23} These real-life complications, however, in no way alter the role of the various elements of the capital stack as outlined in this section.

3. Current arrangements: features and limitations

While current international regulatory arrangements have clear similarities with the basic features of the above conceptual framework, they also differ in important respects (Table 1). These differences reflect a mismatch between the design of the capital stack and the intended role of its various components. Consider similarities and differences in turn.

²⁰ By extension, an authority that wishes to operate with more equity in resolution would raise the target solvency probability underpinning the PoNV.

²¹ In the current framework, Tier 1 minimum capital requirements are in fact referred to as “going concern” capital, possibly for this reason, even though they are to be consumed only in the “gone concern” state.

²² Indeed, the question of how best to use market information in this context is both difficult and important. See eg Borio (2025).

²³ Conversely, in the absence of any market pressure, authorities may allow a temporary breach of the minimum as long as management implements a credible plan to remedy the breach and ensure the bank’s long-term viability.

Current capital stack				Table 1			
Component	Objective ¹	Nature	Eligible instruments				
			CET1	AT1	T2	Other junior debt	
Buffers							
CCyB	MaP TD	Adjustable buffer	✓				
CCoB	MiP/MaP ² TD	Non-adjustable buffer	✓				
G-SIB	MaP CSD	Non-adjustable buffer	✓				
Min requirements							
CET1	MiP	Non-adjustable	✓				
Additional Tier 1 component ³	MiP	Non-adjustable	✓	✓			
Additional total capital component ³	Resolution	Non-adjustable	✓	✓		✓	
Additional TLAC component ³	Resolution	Non-adjustable	✓	✓		✓	✓
Authorities have flexibility to introduce Pillar 2 requirements (“add-ons”) in <i>each</i> part of the capital stack according to jurisdiction-specific factors. In some jurisdictions, such add-ons may be met not only with Common Equity Tier 1 (CET1) but also with Additional Tier 1 (AT1) and Tier 2 (T2) instruments, subject to certain limits. CCyB = countercyclical capital buffer; CCoB = capital conservation buffer; G-SIB = global systemically important bank; TLAC = total loss-absorbing capacity.							
¹ MiP = microprudential; MaP = macroprudential. MiP and MaP refer to going concerns; resolution to gone concerns. CSD = cross-sectional dimension. TD = time dimension. ² As envisaged by Basel III. ³ The additional components refer to requirements on top of the previous minimum requirement in the list. In the case of TLAC, the expectation is that at least one third of a G-SIB’s TLAC requirement is satisfied with debt liabilities.							

3.1. Similarities between the conceptual framework and current arrangements

Minimum capital requirements have been the cornerstone of prudential arrangements, with essentially a microprudential objective, since the original Capital Accord in 1988 (Basel I). The revisions in 2004 (Basel II) put an emphasis on risk modelling and formalised the idea that minimum capital is calibrated to meet a target solvency probability – consistent with a forward-looking identification of the PoNV. Basel II also allowed national authorities to complement the set of harmonised minimum requirements (Pillar 1) with jurisdiction-specific (Pillar 2) capital add-ons. In particular, such add-ons are expected when the supervisory review process reveals that Pillar 1 requirements are insufficient to account for a bank's risk profile. The post-GFC reforms – Basel III – focused inter alia on improving the quality of regulatory capital, emphasising its highest-quality component, CET1. Importantly, Basel III also added a macroprudential overlay and broadened the range of pre-existing microprudential tools.²⁴ As a result, Pillar 1 now covers not only minima but also buffers.

In the time dimension, Pillar 1 envisages two types of buffer. A countercyclical capital buffer (CCyB) seeks to reduce the risk of retrenchment at times of system-wide stress. This is an adjustable buffer. Authorities raise the requirement as they see risks building up in the financial system based on a number of indicators, notably aggregate credit expansion in relation to GDP; and they reduce it (release the CCyB),

²⁴ For a comprehensive overview of the post-GFC financial reforms, see Borio et al (2020).

possibly in steps, as risks materialise. No penalties are envisaged on the *released* portion, ie it becomes part of the management buffer. By contrast, breaches of the *unreleased* portion carry penalties in the form of restrictions on distributions: this ensures that releasable resources are indeed available when authorities decide the time has come to draw on them. In addition, a capital conservation buffer (CCoB) is designed to encourage banks to stay away from the minimum capital requirements and hence remain a going concern. This buffer is not adjustable, and the rules-based penalties become more severe as the size of the breach increases and the amount of capital approaches the minimum.²⁵

In the cross-sectional dimension, Pillar 1 calls for higher loss absorbency for G-SIBs as going concerns. This extra loss absorbency takes the form of a non-adjustable buffer that is an extension of the CCoB.²⁶ The buffer is calibrated so that the likelihood of breaching the PoNV is lower for banks with a greater systemic footprint.

For resolution, the post-GFC international reforms introduced a new element of the capital stack that applies exclusively to G-SIBs – the TLAC.²⁷ Its objective is to ensure that more resources are available for G-SIB resolution, to preserve these banks' critical functions.

In contrast to prudential requirements, there is no internationally agreed resolution requirement for non-G-SIBs. Arrangements for resources to support resolution are left to the discretion of national authorities. That said, Basel III designates Tier 2 (T2) instruments – which are eligible to meet part of a total capital requirement – as gone concern capital for resolution (see next section).

3.2. Differences between the conceptual framework and current arrangements

There is a mismatch between the design of regulatory buffers, minima and resolution requirements, on the one hand, and their respective roles in the conceptual framework, on the other. This mismatch can lead to insufficient loss-absorbing capacity or insufficient usability of this capacity when in stress. It also results in an excessive complexity of the minimum and resolution arrangements.

Buffers do not provide adequate loss absorption to avoid unnecessary bank retrenchment at times of system-wide stress (macroprudential objective). This reflects two factors: the nature of the shocks envisaged and an overestimation of the feasible loss absorbency of non-adjustable buffers.

The CCyB is currently designed to target one key source of system-wide stress – the unwinding of financial booms. That is why indicators of excessive cumulative credit expansion provide the key signal for the buffer's activation, ie for requiring banks to build it up, possibly in stages. As a result, however, the instrument is ill-suited to tackle other sources of systemic stress. The Covid-19 crisis illustrated this: by the time it struck, the releasable amounts in most jurisdictions were small or non-existent. The issue was not so much authorities' reluctance to build up the buffer or, indeed, to release it. Nor was it management's unwillingness to use the released amount (BCBS (2021)). Rather, it was the buffer's design, which was never intended to provide resources for *unexpected* system-wide disruptions.

The overestimation of the feasible loss absorbency of non-adjustable buffers stems from an apparent misunderstanding. It is common to regard non-adjustable buffers, such as the CCoB, as also playing the *macroprudential* role of shock absorbers. However, this misrepresents what these buffers are designed to do. Banks could involuntarily dip into the buffer because of an exogenous shock. However, they would not normally do so *voluntarily* in order to grant credit, as CCoB breaches come with penalties.

²⁵ The CCoB therefore functions as a prompt corrective action mechanism, mitigating the risk of supervisory forbearance. Moreover, whenever the CCyB is activated and not released, the CCoB and CCyB are regarded as a "combined" buffer, and penalties are set based on percentiles of their sum.

²⁶ Just like the CCoB and CCyB, the G-SIB buffer is treated as a part of a "combined buffer".

²⁷ See FSB (2015).

Indeed, the envisaged penalties are equivalent to those associated with a breach of an unreleased CCyB and are designed to ensure that the breach is strictly temporary.

The Covid-19 crisis again illustrates some of the issues involved. During this crisis, banks proved unwilling to draw on the CCoB and other non-adjustable buffers *despite supervisors' encouragement* to do so – part of a broader effort to keep credit flowing, which also involved elements of forbearance.²⁸ Supervisors' strategy was an exceptional response to an exceptional crisis, with unique characteristics, hence the intention to provide a temporary bridge for as long as containment measures remained in place. Banks did not oblige. No doubt, reasons included the uncertainty surrounding the length of the regulatory relief and concerns about moving dangerously close to the minimum if the crisis persisted. And there were also concerns about outsize market reactions, credit rating downgrades and the risk of costly equity issuance, particularly in times of low profitability. But the CCoB design played a key role as well.

Regarding the minimum capital and resolution requirements, there is no clear mapping between stack components and the corresponding policy objectives. The complexity results in multiple potential resolution triggers, in wedges between the PoNV and the PoER, and in insufficient loss-absorbing capacity on a going-concern and, possibly, gone-concern basis. This reflects overlaps between minimum and resolution requirements, the complex structure of the instruments eligible for their fulfilment and the lack of explicit differentiation between the penalties associated with breaches, all of which can in principle trigger resolution. More specifically, three points stand out.

First, in addition to the breach of minimum equity-capital requirements, Basel III implies that entry in resolution can be based on breaches of two other requirements that refer to debt instruments. One is the total capital requirement, which can be partly met with T2 capital – gone concern capital. The other is TLAC, which must be fulfilled, at least in part, by such instruments.²⁹ As argued in the previous section, debt instruments – including those that comprise T2 capital – are not suited to define the PoNV and hence the PoER.

Second, minimum equity requirements include instruments that rarely absorb losses when banks are going concerns and are therefore also unsuitable to define the PoNV.

It stands to reason that the ideal instruments to define the PoNV are those that have the strongest loss absorbency on a going-concern basis. By their nature, such instruments command the greatest confidence from markets. And by reassuring the bank's debt holders, they also reduce the likelihood that authorities place the bank into resolution before its regulatory buffers have been exhausted.

CET1 capital is best suited for this purpose. When a bank makes profits, its assets grow relative to its liabilities, causing CET1 to increase. Conversely, when a bank incurs losses, its assets decline, and CET1 decreases by the same amount. This automatic adjustment ensures that CET1 is the first line of defence, absorbing losses instantaneously, without intervention from bank management or supervisors.

While the framework does recognise the unique qualities of CET1 capital, it also allows debt instruments with contingent equity-like properties to underpin – up to a limit – the PoNV. These instruments, referred to as AT1, are designed to absorb losses in two ways: (i) through cancellation of coupon payments; or (ii) by being written off or converted into CET1 capital if the bank crosses a

²⁸ See Borio and Restoy (2020) for an analysis of this episode.

²⁹ The FSB's "Total loss-absorbing capacity (TLAC) term sheet" specifies that a breach, or likely breach, of the minimum TLAC should be treated with the same severity as a breach, or likely breach, of minimum capital requirements and addressed promptly to ensure sufficient loss-absorbing capacity is available during resolution.

prespecified – mechanical or discretionary – threshold as it approaches its CET1 minimum requirement.^{30, 31} It is in this sense that AT1 instruments – even if initially in the form of debt – contribute to lowering the bank’s default probability.

However, this fundamental role of AT1 instruments has proven challenging to fulfil in practice. Fearing a severely adverse market reaction, banks do not discretionarily cancel AT1 coupon payments when they approach the PoNV. For similar reasons – as seen during the 2023 banking turmoil – both authorities and banks seek to avoid imposing going-concern loss absorption on AT1 holders ahead of shareholders via AT1 conversion or writedown. As a result, AT1 instruments tend to remain in the form of convertible debt until the bank enters resolution – ie they are more suitable as bail-in debt, which absorbs losses in resolution.³²

Third, resolution-related requirements can be met, at least in part, with equity, complicating the determination of the PoNV and its relationship with the PoER. The analysis laid out in the previous section concluded that resources earmarked for resolution – ie those in addition to the equity capital underpinning the PoNV – should be in the form of debt. That is, the requirements for resolution should exclude instruments that are suited to absorbing losses on a going-concern basis and are thus used to define the viability of the bank.³³

Both TLAC and the Basel III minimum total capital requirement fail this test. In particular, while TLAC requires G-SIBs to have loss-absorbing liabilities over and above those needed to satisfy minimum prudential requirements, these liabilities can largely be in the form of CET1 capital, ie the same *type* of instrument that determines the PoNV.³⁴ Similarly, the component of total capital requirements on top of Tier 1 requirements, which may be satisfied with gone concern T2 (debt) instruments, may also be fully satisfied with CET1 capital.

This overlap drives a wedge between the PoNV and the PoER and has implications for the resources actually available in resolution. To fix ideas, think of two banks that differ in how they fulfil the total capital requirement: one does so only with CET1 capital; the other uses T2 debt instruments for the portion exceeding Tier 1 requirements. Imagine that the two banks start to incur losses, which consume equity. If the PoNV is defined in terms of the Tier 1 (equity) ratio, the PoNV and PoER coincide, but the bank without T2 debt would have no resources for resolution. If, by contrast, the PoER is associated with the breach of the total capital requirement, the equity-only bank will enter resolution while still above the PoNV (ie with a *lower* probability of failure).³⁵ Similar arguments apply to TLAC.

³⁰ For AT1 instruments classified as liabilities for accounting purposes, Basel III mandates a quantitative trigger set at a CET1 ratio of 5.125% or higher. Furthermore, the conversion or writedown clause may be triggered earlier at the discretion of the relevant authority or on the basis of objective criteria, eg provision of public support.

³¹ Some jurisdictions seek to ensure loss-absorption requirements in different ways. The United States, for example, applies the statutory approach to the PoNV requirements. Accordingly, instruments qualifying as AT1 (ie preferred stocks) typically do not contain contractual terms establishing writedown or conversion triggers related to CET1 depletion. Instead, loss absorption stems from the ability of the Federal Deposit Insurance Corporation to place failing banks into receivership and to require that capital instruments issued by failing banks be written down before taxpayers incur losses (Coelho et al (2023)).

³² Coelho et al (2023).

³³ Besides not providing loss absorption on a going-concern basis, AT1 instruments cannot be earmarked for resolution. This is because an instrument qualifies as AT1 only if it has an automatic write-off or a conversion trigger *above* the minimum CET1 requirement. Removing this trigger (thus losing the AT1 status) is necessary for an instrument to be earmarked for resolution.

³⁴ The TLAC standard states an expectation that at least 33% of TLAC be issued in the form of debt. In other words, up to 67% of these requirements can be fulfilled with CET1 capital.

³⁵ Since a bank can choose between junior debt and CET1 capital in meeting parts of total capital and TLAC requirements, the deviation between the PoNV and the point of entry in resolution is fundamentally the result of the bank’s choice. It would materialise if the issuance of TLAC or T2 eligible debt was seen as too expensive – eg because of the bank’s size or business model or because of underdeveloped market segments.

4. How to improve the current framework

Some modifications to the current framework could help address the limitations identified above. They would do so by better aligning the individual components of the stack with their objectives while at the same time substantially reducing the framework's complexity (Table 2). Possible modifications are:

1. Add a cycle-neutral adjustable buffer component to the CCyB and either retain or remove the CCoB.
2. Establish a single minimum requirement to be fully met with CET1 capital.
3. Replace the TLAC and total capital components above CET1 requirements with additional resources for loss-absorbing capacity (ARLAC) in resolution, to be fully met with eligible debt instruments. This minimum requirement would be applicable to all banks but increase with their systemic importance.
4. Clearly differentiate the penalties associated with a breach of the (single) minimum requirement – ie entry into resolution – from those associated with a breach of the resolution-specific requirement.

A possible new scheme				Table 2
Component	Objective ¹	Nature	Eligible instruments	
			CET1	Junior debt
Buffers				
General	MaP TD, MiP	Adjustable, with a cycle-neutral component and with or without a non-adjustable component	✓	
G-SIB	MaP CSD	Non-adjustable	✓	
Min requirements				
CET1	MiP	Non-adjustable	✓	
ARLAC	Resolution	Non-adjustable		✓

A Pillar 2 framework would complement the above, as under Basel III.

ARLAC = additional resources for loss-absorbing capacity; CET1 = Common Equity Tier 1; G-SIB = global systemically important banks.

¹ MiP = microprudential; MaP = macroprudential. MiP and MaP refer to going concerns; resolution refers to gone concerns. CSD = cross-sectional dimension. TD = time dimension.

To see the underlying rationale, consider each limitation of the current framework in turn.

Inadequate resources for limiting banks' retrenchment at times of system-wide stress (macroprudential objective, time dimension). This limitation can be addressed in two different ways, depending on the specific evaluation of the pros and cons.

The option that makes the smallest modification is to add a cycle-neutral component to the CCyB. In contrast to the current CCyB, this releasable component will be and remain activated even if the authorities do not see the build-up of financial cycle risks, thus addressing more unpredictable sources of

systemic risk.³⁶ This change would in effect result in a general buffer with three components: an adjustable cycle-sensitive component, an adjustable cycle-neutral component and a non-adjustable component.

The other option is to take advantage of the new cycle-neutral component to simplify the buffer structure by removing the CCoB, ie the non-adjustable component. The rationale is that the cycle-neutral component, unlike its cycle-sensitive counterpart, would be present most of the time to perform the function currently performed by the CCoB, given the equivalent penalties for breaches.³⁷

The disadvantage of this option is that it would not allow for a clear one-to-one mapping between instruments and objectives: the new buffer would in effect target both macroprudential and microprudential goals. In extreme macro scenarios that call for a full release of the adjustable buffer, non-G-SIBs would have no regulatory Pillar 1 buffer with a microprudential function. However, if they saw the need, prudential authorities could compensate for this through higher non-adjustable buffers in Pillar 2 or, albeit at some cost in terms of usability, by releasing the adjustable buffer more gradually. Compared with the option of retaining the CCoB, which would in general call for higher capital requirements in normal times, this option would be more acceptable if authorities regard the overall stringency of the current buffer structure as appropriate.

No clear mapping between the capital stack components and objectives in the minimum capital and resolution requirements (microprudential and resolution objectives). The proposed simplification solves this issue. The only instrument defining the PoNV is the one best suited to do so – CET1 capital.³⁸ The PoNV and PoER coincide – there is a single minimum equity-capital requirement that defines viability and is the only one triggering entry in resolution. And *additional* resources are ensured in resolution without clouding the PoNV – ARLAC is in the form of bail-in debt and the penalties for breaching it intensify as the PoNV is being approached but do not involve entry in resolution.^{39, 40} Each component of the minimum and resolution requirements has a single objective and, accordingly, is defined in terms of different instruments (CET1 capital or junior debt).

The modified framework addresses the cross-sectional dimension in a couple of ways.

For one, it calls for calibrating the resolution requirement with respect to systemic significance. Having an explicit requirement for *all* institutions subject to Basel III recognises the importance of ensuring adequate resolution-specific resources regardless of systemic significance.⁴¹ This was illustrated most recently by the banking crisis in the United States in March 2023, where the lack of loss-absorbing capacity in failing regional banks significantly complicated their resolution and raised the ultimate costs of failure management.⁴² At the same time, calibrating the resolution-specific resources to systemic significance recognises that not all institutions are born equal. An orderly resolution of G-SIBs, which preserves all their critical functions, is more challenging for authorities and more beneficial for the financial system; smaller and simpler banks tend to need fewer resources for an orderly exit. In addition, the proposal retains the

³⁶ While some jurisdictions have already adopted such a tool, or at least a similar one, the instrument is not yet prescribed by international standards. See BCBS (2024).

³⁷ See Woods (2022) for arguments in favour of a single, fully adjustable buffer.

³⁸ Although beyond the scope of this paper, in line with this proposal, the leverage ratio requirement would be met exclusively with CET1 capital and would not be the basis for separate buffers.

³⁹ A similar scheme is proposed in Nagel (2025).

⁴⁰ These instruments should be senior to CET1 capital but junior to deposits. Admissible ones include, inter alia, those currently eligible for AT1, T2 and other junior debt.

⁴¹ Only a few jurisdictions, such as the European Union, impose resolution requirements for all entities other than G-SIBs in accordance with the FSB standard. FDIC (2023) provides an argument for extending loss-absorbency requirements in resolution beyond G-SIBs to other systemically important banks.

⁴² See eg Baudino et al (2025).

G-SIB buffer. Its function is to have an extra safeguard for these banks to keep them away from the minimum so that they remain viable.

5. Conclusion

The post-GFC regulatory reform has enhanced banks' resilience and supported sustainable economic growth. At the same time, it has also resulted in a capital stack that is overly complex, with some of its components generating insufficient loss-absorbing capacity or insufficient usability of this capacity when in stress. This can reduce the capital stack's effectiveness as an instrument in the pursuit of core microprudential, macroprudential and resolution objectives. Our paper seeks to identify specific ways to enhance its effectiveness and reduce its complexity.

The possible modifications analysed in the paper are designed to deliver better alignment of the individual components of the capital stack with their objectives while at the same time drastically reducing complexity. They involve: (i) a single minimum capital requirement to be met exclusively with the highest-quality (CET1) capital and whose purpose is to define the PoNV so that it coincides with the PoER; (ii) an additional resolution requirement (ARLAC) to be fully met with bail-in debt, with penalties for breaches other than entry in resolution, applicable to all banks but calibrated to their systemic significance; and (iii) a single adjustable buffer which has a cycle-sensitive component (similar to the CCyB), a cycle-neutral component and – optionally – also a non-adjustable component (similar to the CCoB).

The paper does not discuss *quantitative* calibration but suggests general principles that could guide this critical step.

First, the approach to calibration needs to be *holistic*. As the paper highlights, interrelationships between the various components of the capital stack need to be taken into account, in line with their specific impact and objectives. For example, if the current calibration of minimum Tier 1 requirements corresponds to the target minimum default probability, removing AT1 instruments from Tier 1 capital, to rely exclusively on CET1, should arguably be partly compensated by an increase in the minimum. The regulatory intention has been for the two instruments to complement each other in targeting a common objective – equate viability with a high solvency probability. The new calibration should not undermine this objective.

Second, and more importantly, *simplification does not mean dilution*. It is essential to ensure that a new framework does not undermine the system's post-crisis ability to safeguard financial stability. The simplification is only a means to improve effectiveness while at the same time reduce the burden on financial institutions, which stand to benefit from a more clearly structured capital stack.

Ultimately, the aim of this paper is to provide a technical analysis that could help structure discussions of how to enhance the effectiveness of the regulatory capital stack for supporting financial stability and reduce its current complexity. Concrete practical steps in pursuit of this goal would require further careful consideration of the interdependencies of the underlying microprudential, macroprudential and resolution objectives. Recognising these interdependencies is key for designing a coherent and effective framework.

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