Usability of Bank Capital Buffers: The Role of Market Expectations

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Capital buffers during the COVID shock

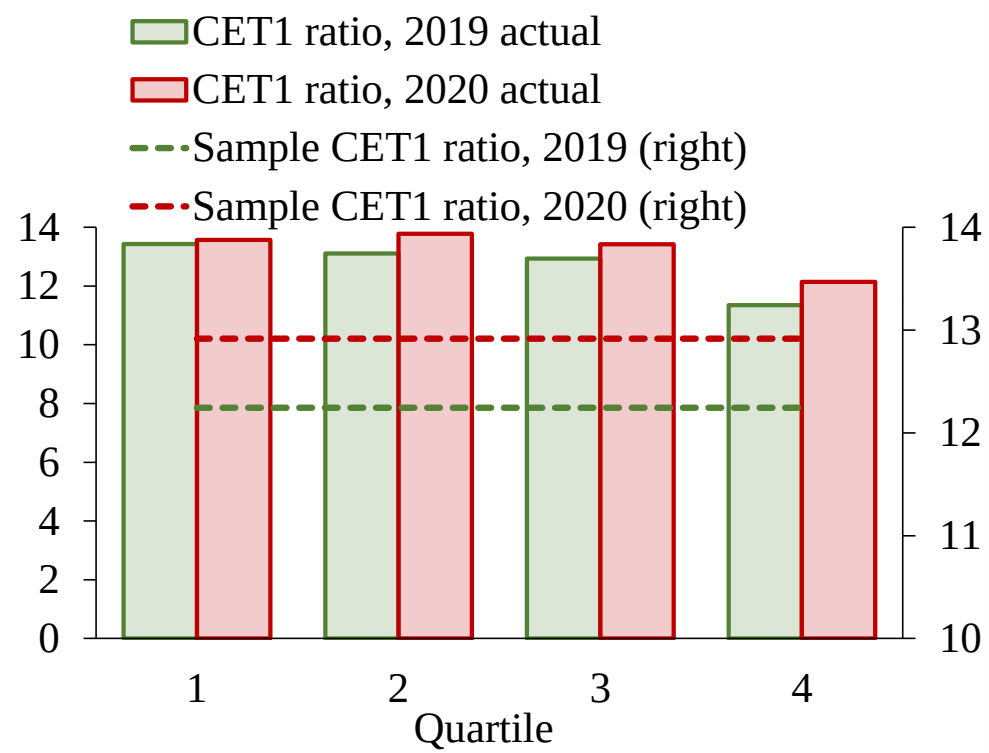
1) Capital buffers fulfill a **dual role** (BCBS, 2020):
   - Absorb credit losses at times of stress (forced – loss recognition)
   - Support lending and the economic recovery (voluntary)

2) Using buffers: temporarily bringing CET1 ratios below the threshold defined by the MDA; a "looser" definition would imply temporarily bringing CET1 ratios below a bank's CET1 target without necessarily breaching the MDA threshold.

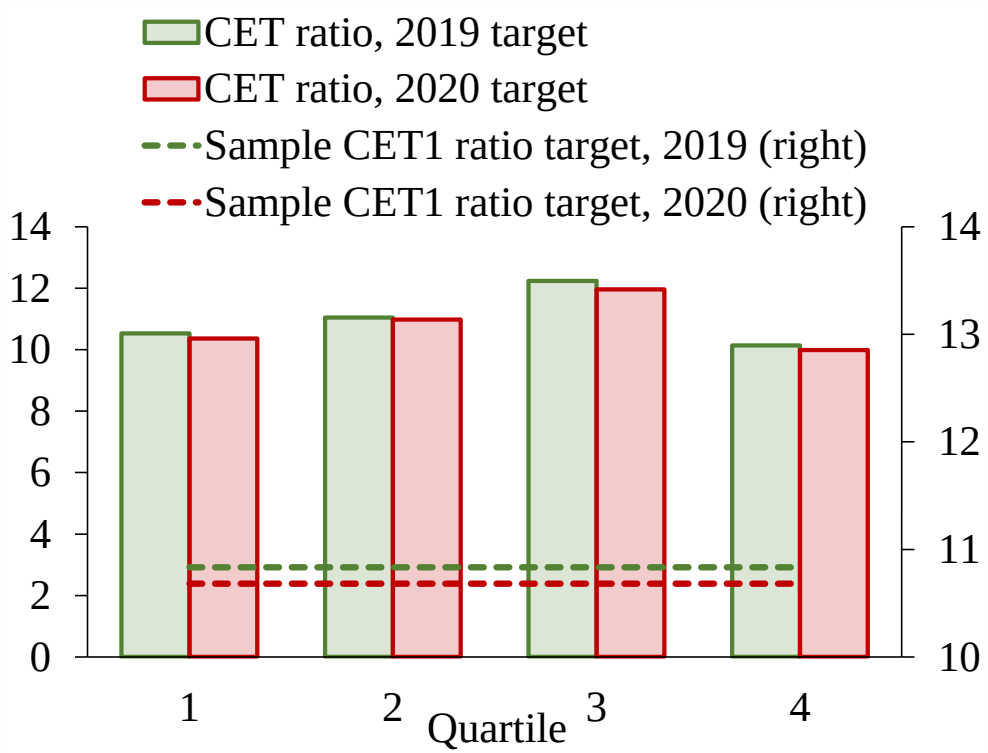
3) There is no evidence buffers were used during the COVID shock in any meaningful scale under any of these two definitions:
   1) Banks reported higher CET1 ratios in 2020 (vs 2019).
   2) Banks announced stable CET1 targets in 2020 (vs 2019).
   3) Values of hybrid instruments (AT1, LT2, preferred shares) recovered very quickly.
   4) Empirical evidence from the COVID shock suggests a positive impact on expected lending from a lower MDA but limited MDA breaches

❶ Higher CET1 ratios, ❷ stable targets

Actual CET1 Ratios, Market Capitalization Weighted Averages (Percent of RWA)



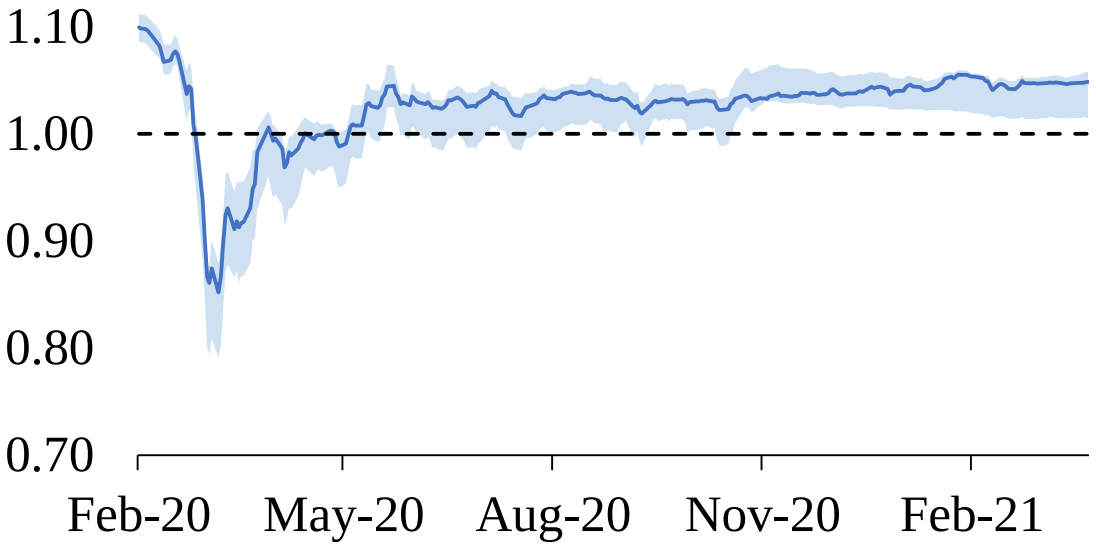
CET1 Targets, Market Capitalization Weighted Averages quartiles (Percent of RWA)



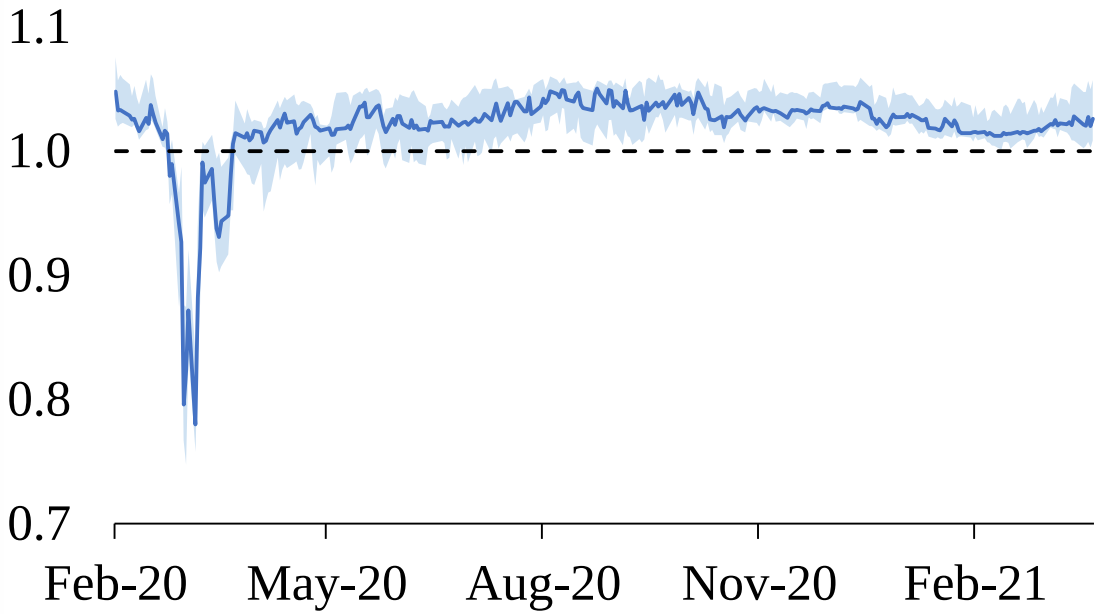
❸ Quick recovery in bank hybrid instruments

Subordinated Debt Prices
(as a ratio of notional value)

European Banks AT1 instruments:
price as a ratio of notional values



US Banks preferred shares: price
as a ratio of notional value



Several reasons have been put forward …

1) Distribution restrictions (CET1 < MDA), higher conversion/dilution risk (AT1 trigger)

2) Uncertainty across four dimensions:
   - Credit losses, particularly in case of provision-smoothing
   - Reversal of temporary capital relief and other prudential measures
   - Expectation for higher capital requirements post COVID (e.g., Basel III)
   - Length of capital re-build horizon post buffer draw-down (conflicting supervisory messages, potential time inconsistency problem)

3) Other binding requirements (e.g., leverage ratio, MREL)

4) Potential market stigma in case individual CET1 ratio < sector average

5) There was no need to use them in the first place

… another important reason

A structurally low return profile would make the rebuilding timeline too long and/or any attempt to rebuild buffers inorganically too dilutive for shareholders.

In addition, if rebuilding capital buffers becomes a multi-year event, the impact from any distribution restrictions—for shareholders and bondholders—may end up being a multiple of the cost associated with a temporary ban on such restrictions.

Assessing the likelihood/ convenience of bank capital buffer usability: A framework

1) **Capacity hurdle –** ***Are there any buffers to be used?***
    1) Capacity to use buffers = CET1's distance to MDA > 0
    2) Banks reluctant to operate with CET1 < MDA (Berrospide et al, 2021)
2) **Supervisory hurdle –** ***Can I rebuild them within a reasonable horizon?***
    1) After using the buffers, supervisors expect banks to rebuild them
    2) Capacity to rebuild buffers organically within a "reasonable" timeframe (not too short to be dilutive, not too long to be non-credible)
3) **Management hurdle –** ***Can I make a reasonable return on investment?***
    1) Expectation for a "reasonable" return on the investment made
    2) Bank management's fiduciary duty requires them to act in the best interest of both the corporation and its shareholders

Data and Sample

1) **Data:**
   1) Longest-dated available consensus expectations (FY3 = 2022) for key financials, from Bloomberg, as of Jan 2021.
   2) CET1 requirements and medium-run targets from banks' financial statements, both pre- and post-COVID (end-2019 and end-2020).

2) **Sample:**
   1) 71 publicly-listed banks across 23 countries and 5 continents, with an overall market cap of $2.8 trillion, c. 60% of the global banking system, as of Jan 2021.
   2) Sample comprises all banks included in IMF's Global Stress Test with enough available data to calibrate our framework.

Sizing the buffer draw-down

1) Baseline scenario: 2.5% RWA

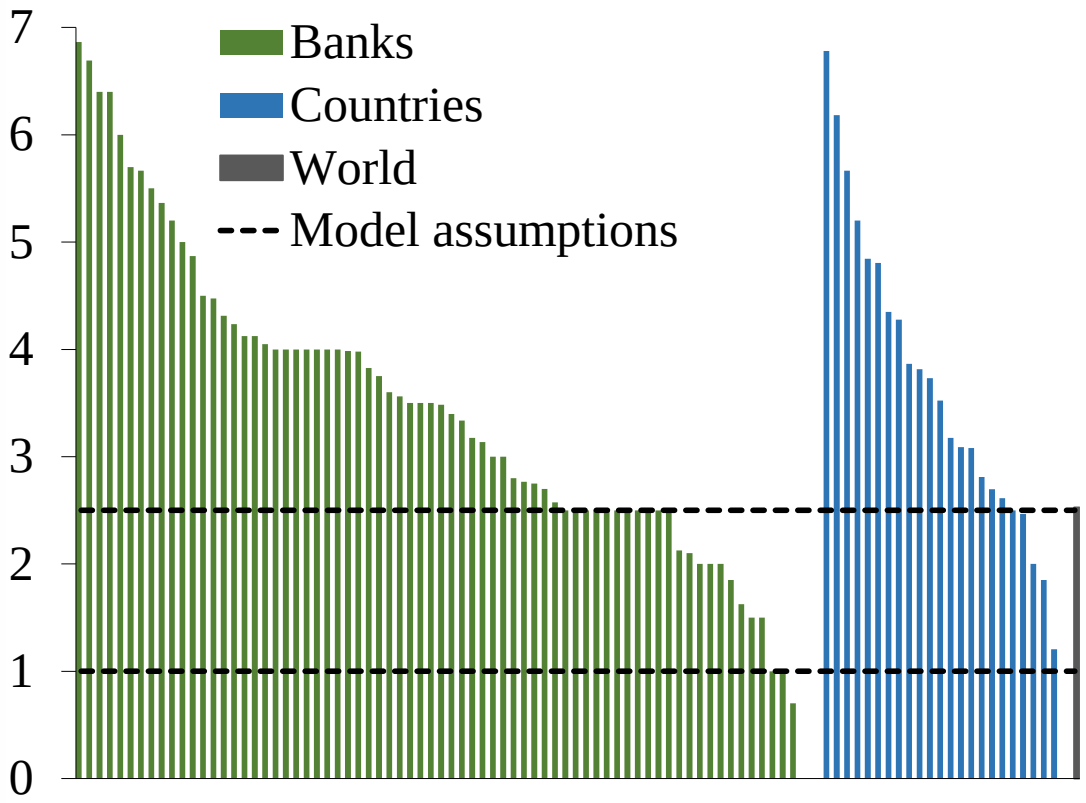
1) On par with the CCyB's upper bound (0%-2.5% of RWA), half of the average CBR in our sample.
2) We judge this as meaningful (buffer usability needs to be meaningful in order to have visible economic effects) but without breaching the Basel Committee's "measured draw-down" guidance (BCBS, 2020).

2) Alternative scenario: 1% RWA

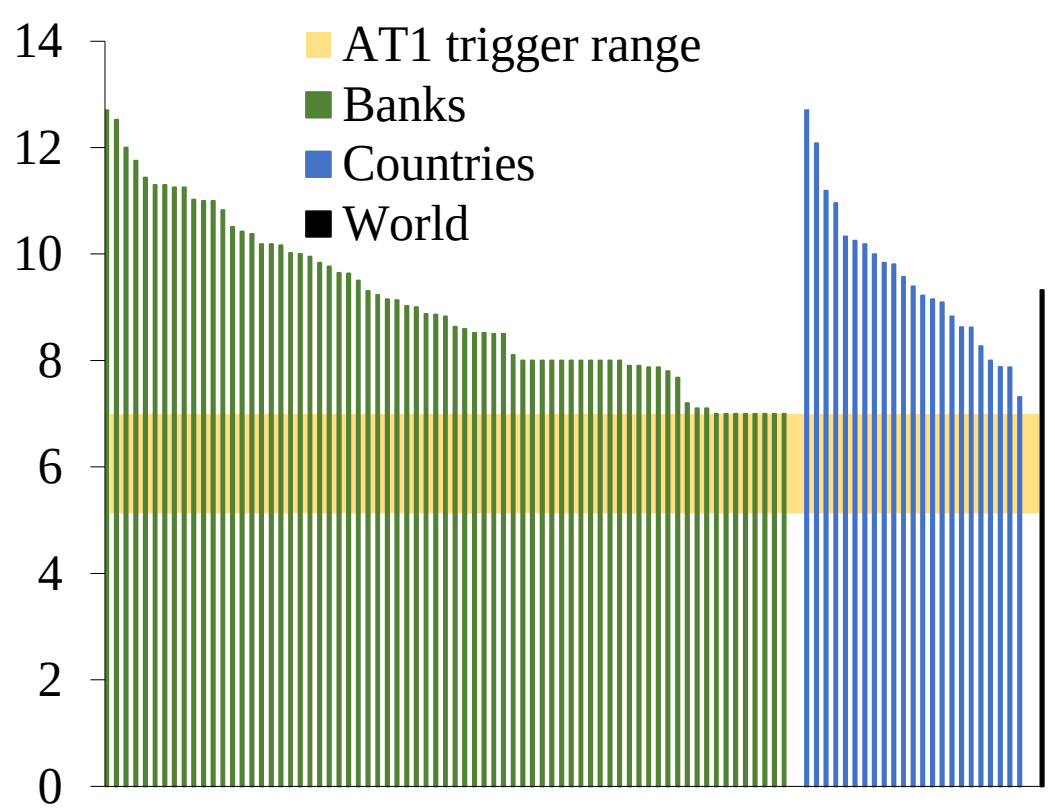
1) In line with analysts' expectations at the time supervisors released the CCyB and encouraged banks to use their remaining buffers.
2) In line with the only two banks in our sample that had provided explicit guidance about the usable portion of their CET1 stack.

❶ Capacity hurdle

Management Buffer [CET1 target – MDA] (Percent of RWAs, end-2020)



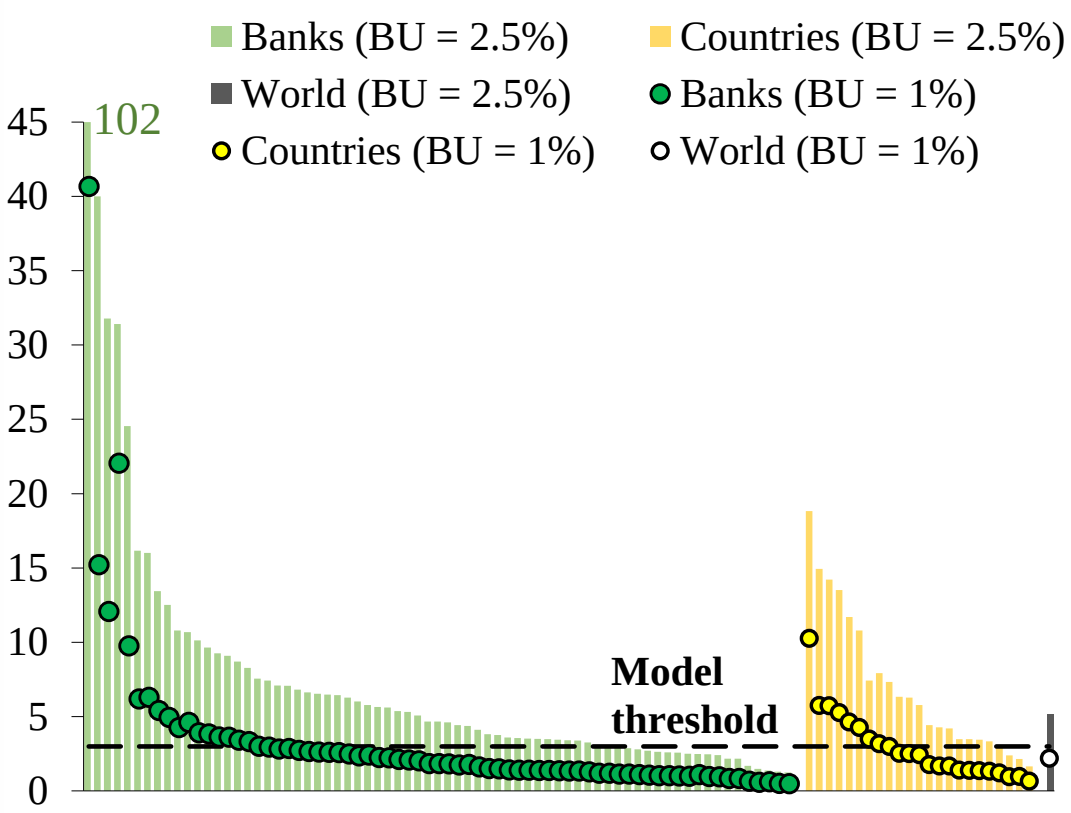
Maximum Distributable Amount (MDA) Threshold (Percent of RWAs, end-2020)



Outcome: **54% of banks** clear the hurdle for a draw-down = 2.5% RWA (70% for a 1% draw-down)

❷ Supervisory hurdle

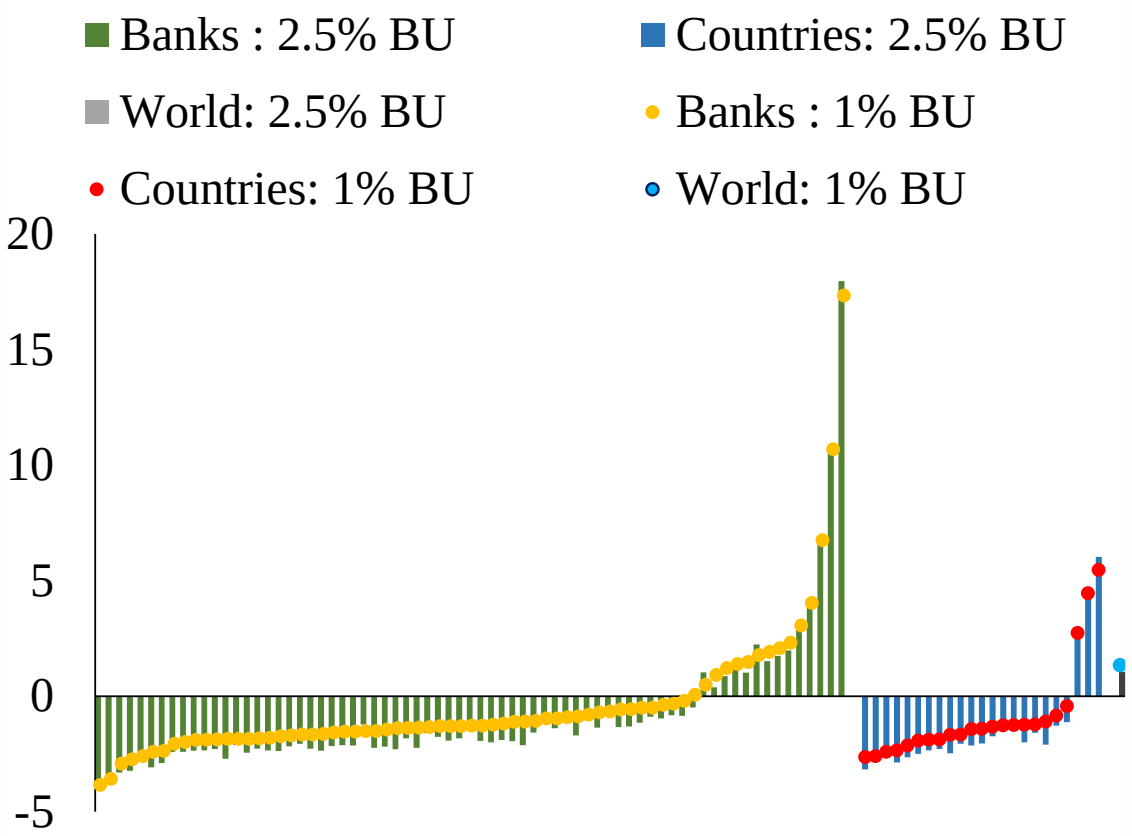
Estimated Years to Rebuild 2.5% and 1% Buffer Draw Down



- **Organic capital generation model**, where ▲CET1:
  - + Net earnings pre-usability
  - + Incremental earnings post-usability
  - - Cash dividends
  - - AT1 coupon payments
- **Calibration**: FY3 consensus expectations, CET1 requirements and targets, all as of Jan 2021
- **Some key assumptions**:
  - Static B/S (except for buffer draw-down)
  - Static RWA density and ROA
- **Outcome**: **65% of banks** in our sample can rebuild buffers in ≤3 years under a buffer draw-down = 2.5% RWA (95%, if draw-down = 1% RWA)

❸ Management hurdle

Value Shortfall
(Percent of RWA, as of Year 3)



- **Capital-adjusted residual income model** (Massari et al, 2014; Damodaran, 2013):
  - The intrinsic value of a bank's equity is a function of its future excess returns, adjusted for its CET1 ratio relative to its target.
  - Valuation model feeds from the organic capital generation model (supervisory hurdle).
- **Fair value (FV) paths**:
  - Expected FV if buffers are NOT used (a)
  - Expected FV if buffers are used (b)
  - Required FV if buffers are used (c), where c = a + ▲FV (ROE ≥ 2xCoE)
- **Value shortfall (VS)** = b – c
- **Outcome**: Only **20% of banks** in our sample manage to create value (VS >0) in ≤3 years, regardless of magnitude of buffer draw-down

Results for a buffer shock @ 2.5% of RWA

Banks Ranked by Price-to-Book Ratio	Capacity Hurdle	Supervisory Hurdle		Management Hurdle	Capital Buffer Usability
	Capital Buffer Availability[1]	Years to Rebuild Buffers[2]	Asset Quality[3]	Bank's Expected Equity FV[4]	Success Rate[5]
1st Quartile [Bottom]	1.5x	16.2	✗	✗	0.0
2nd Quartile	1.2x	7.5	✓	✗	0.0
3rd Quartile	1.3x	5.1	✓	✗	0.0
4th Quartile [Top]	0.7x	2.9	✓	✓	6.8
World	1.0x	5.2		✗	3.3
Success rate[5]	53.6	64.6	99.6	20.7	3.3

[1] Hurdle cleared at 1 times of buffer drawn

[2] Hurdle cleared at less than or equal to 5 years.

[3] Hurdle cleared at 3 times the regions pre-COVID 19 NPL ratio.

[4] Hurdle cleared if expected bank equity FV is greater than required equity value in year 3

[5] Percent of banks, by market capitalization, clearing the hurdles

Main takeaways

1) Provided the market expects a bank to rebuild its buffers, any buffer draw-down will open up a capital shortfall that will weigh on its share price. Therefore, a bank will only decide to use its buffers if the value creation from a larger loan book offsets the costs associated with a “capital shortfall”.

2) **Results**: cases in which the use of buffers make economic sense are rare in practice.

   - **Only a handful of banks (<4%)** in our sample would have been willing to use their buffers for a draw-down of 2.5% of RWAs, clearing all 3 hurdles (capacity, supervisory and management).

   - The **management hurdle** seems to be the most binding one.

3) There is **no silver bullet** that can guarantee the voluntary usability of capital buffers, but policy makers may be able to increase the likelihood of usage …

To enhance buffer usability

1) **An *Enhanced* Countercyclical Buffer (*E*CCyB)** by re-defining the CCyB across three dimensions:
   - Incorporate market expectations explicitly (via the "value shortfall" concept) into the CCyB's calibration, making it bank specific
   - Increase the weight of the CCyB in the CBR.
   - Use forward guidance in order to steer market expectations towards both the proportion of buffers used to be rebuilt (e.g., 50%) and the associated timeline for this to materialize (e.g., ≥3 years).

2) **A public guarantee scheme**, with bank-specific guarantees calibrated according to each bank's estimated "value shortfall"

APPENDIX

Capital buffers…

1) A key component of Basel III in the aftermath of the GFC.
2) They sit above Pillar 1 and 2 requirements, have to be met with CET1.
3) Cyclical (CCyB) and structural (CCB, SRB).
4) The aggregation of all buffers is known as the combined buffer requirement (CBR) and its upper bound coincides with the minimum distributable amount (MDA) threshold. MDA breaches (CET1 < MDA) trigger automatic distribution restrictions (dividends, AT1 coupons, bonuses).
5) Buffers fulfill a dual role (BCBS, 2020):
    1) Absorb credit losses at times of stress (forced – loss recognition)
    2) Support lending and the economic recovery (voluntary, subsidiary)

Capital buffers…

6) Prudential authorities can reduce the CBR in two ways:
   a) De-activating the CCyB (0%-2.5% RWA)
   b) Allowing banks to temporarily operate with a CET1 ratio <MDA
7) In March 2020, and in the context of a much broader policy package, bank supervisors around the world alongside the Basel Committee on Banking Supervision (BCBS, 2020):

Lower MDA level

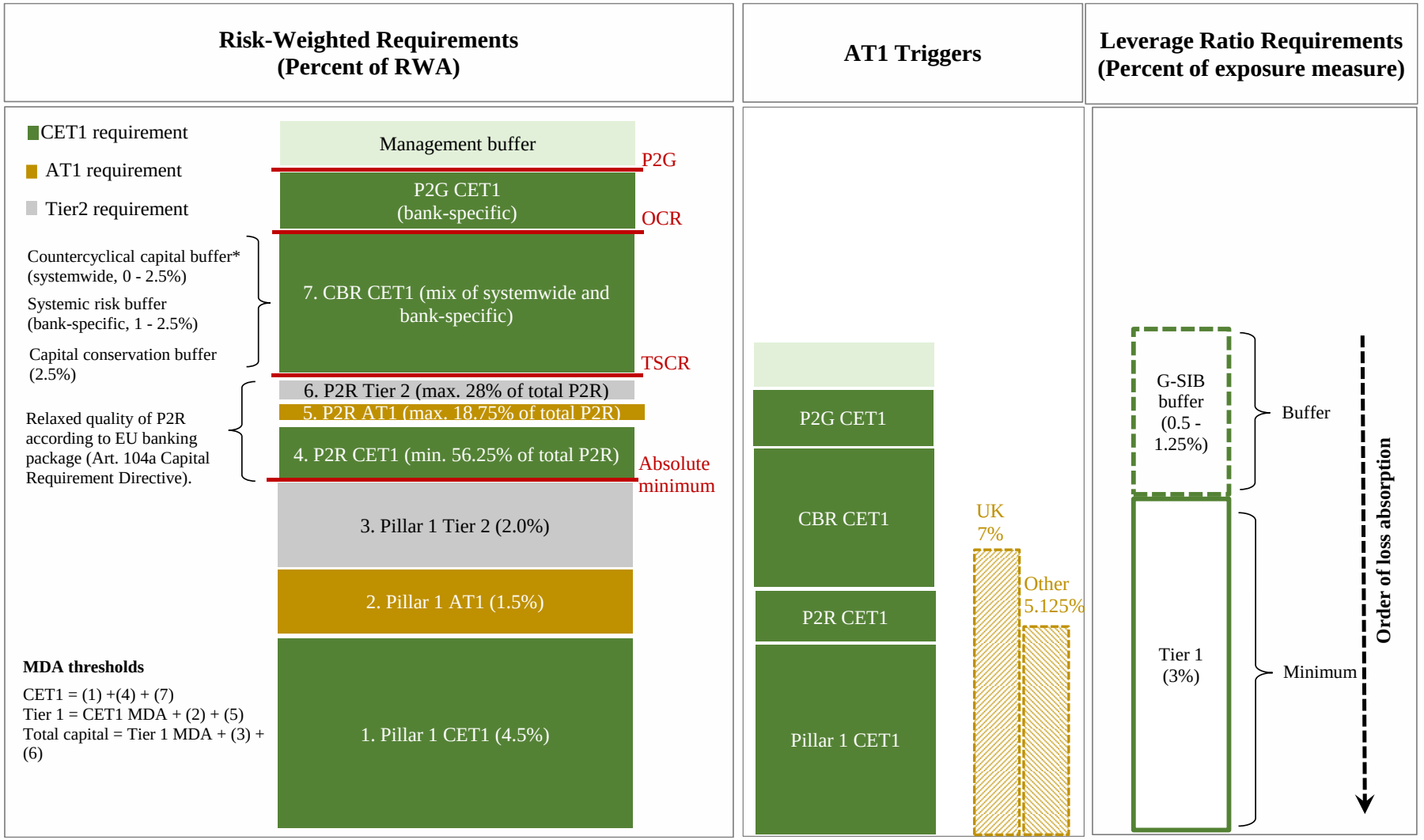
- ✓ released the CCyB
- ✓ reduced the SRB in some countries
- ✓ SSM allowed banks to meet part of their P2R with non-CET1 (AT1 and LT2)

MDA breach

- ✓ encouraged banks to voluntarily use their remaining buffers

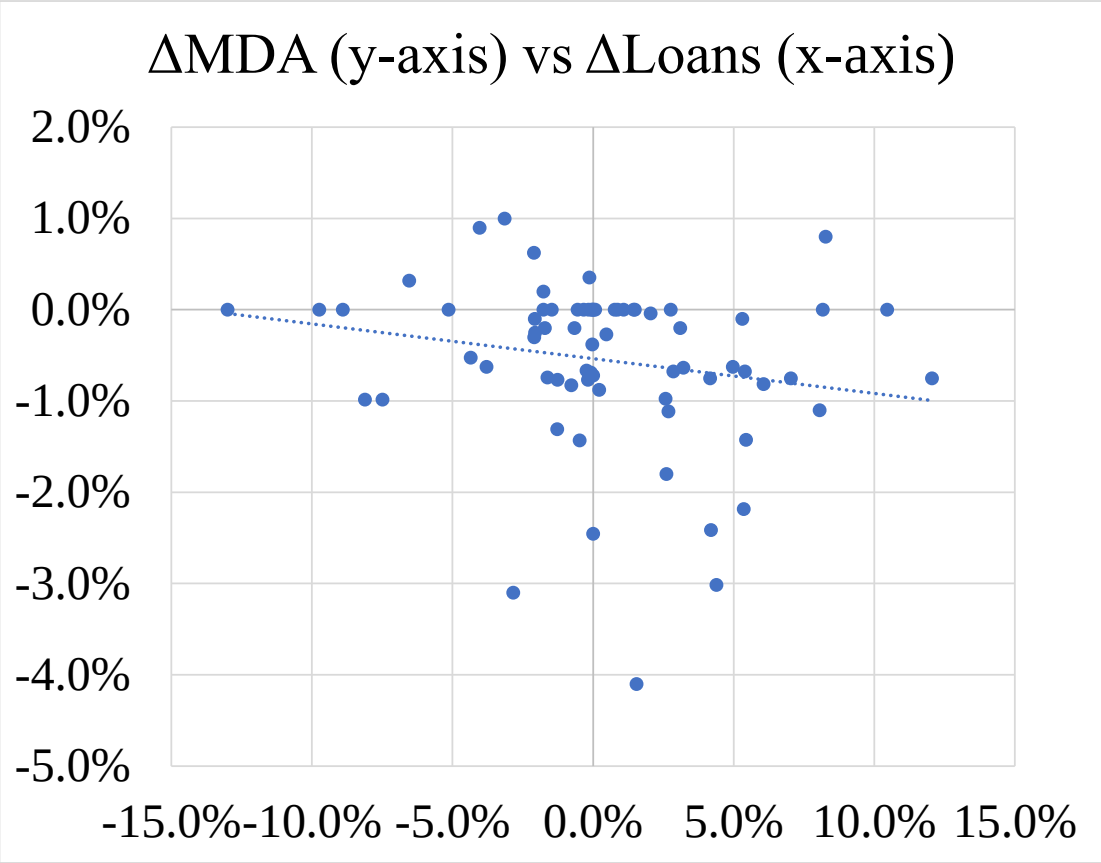
Capital buffers…

Basel III regulations on bank capital requirements, triggers and leverage ratios



❹ No evidence of MDA breaches

Changes in CET1 capital requirements and expected loan growth



- **Lower CET1 requirements (lower MDA):**
  - Evidence from the COVID shock suggests a positive impact on lending from a lower CCyB (BCBS, 2021) and P2R (ECB, 2021).
- **However, limited MDA breaches observed:**
  - Evidence following the COVID shock suggests banks reluctant to lend when CET1 ratio close to MDA (Berrospide et al, 2021).
  - No MDA breaches in our sample.

    SSM (2021) reported nine banks with CET1 < [MDA + P2G] in early 2021, vs six a year earlier (out of 112 and 109 Eurozone banks, respectively).

Results for a buffer shock @ 1.0% of RWA

Banks Ranked by Price-to-Book Ratio	Capacity Hurdle	Supervisory Hurdle		Management Hurdle	Capital Buffer Usability	Pro-forma Impacts in t = 0			
	Capital Buffer Availability[1]	Years to Rebuild Buffers[2]	Asset Quality[3]	Bank's Expected Equity FV[4]	Success Rate[5]	Δ Loans (%)	Δ RoCET1 (pp.)	Δ CET1 Leverage Ratio (pp.)	Δ CET1 Ratio (pp.)
1st Quartile [Bottom]	3.7x	6.4	✗	✗	0.0	0.0%	0.0%	0.0%	0.0%
2nd Quartile	3.0x	3.4	✓	✗	4.4	0.4%	0.1%	0.0%	0.0%
3rd Quartile	3.3x	2.0	✓	✗	0.0	0.0%	0.0%	0.0%	0.0%
4th Quartile [Top]	1.9x	1.2	✓	✓	9.7	0.8%	0.2%	-0.1%	-0.1%
World	2.5x	2.2		✗	5.9	0.5%	0.1%	0.0%	-0.1%
Success rate[5]	70.0	95.4	99.6	20.7	5.9				

[1] Hurdle cleared at 1 times of buffer drawn

[2] Hurdle cleared at less than or equal to 5 years.

[3] Hurdle cleared at 3 times the regions pre-COVID 19 NPL ratio.

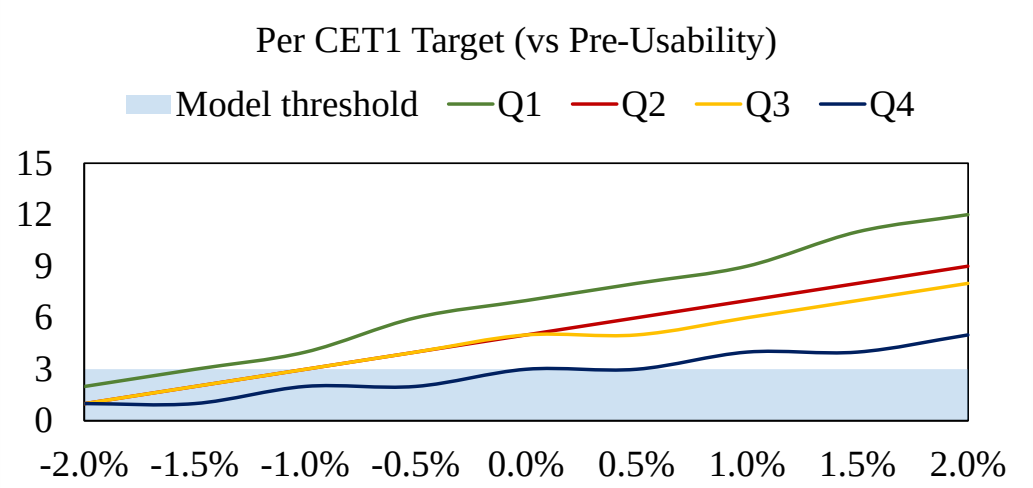
[4] Hurdle cleared if expected bank equity FV is greater than required equity value in year 3

[5] Percent of banks, by market capitalization, clearing the hurdles

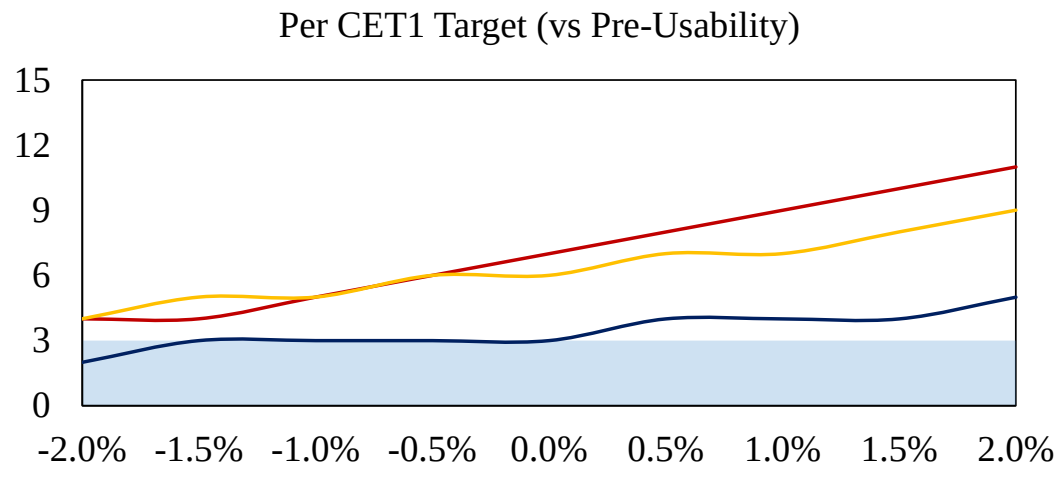
Fair value path post draw-down (vs counterfactual)

Sensitivity analysis (draw-down = 2.5% RWA)

#Years to rebuild buffers



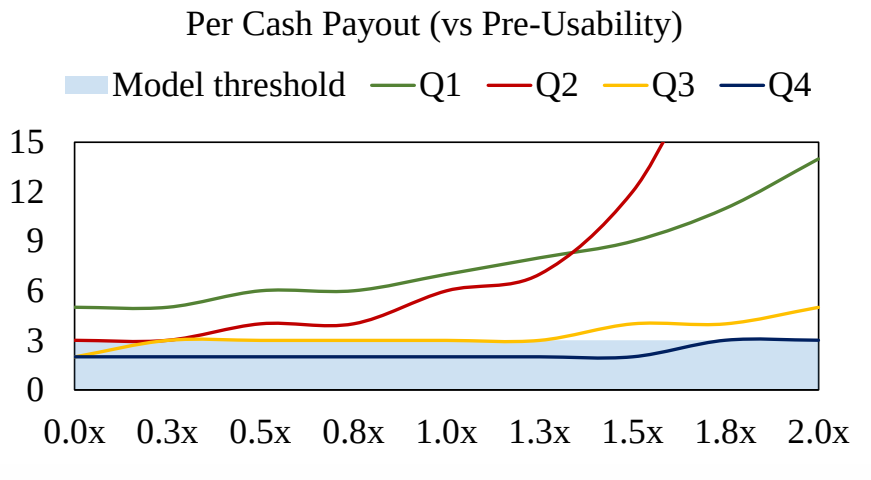
#Years to reach required fair value

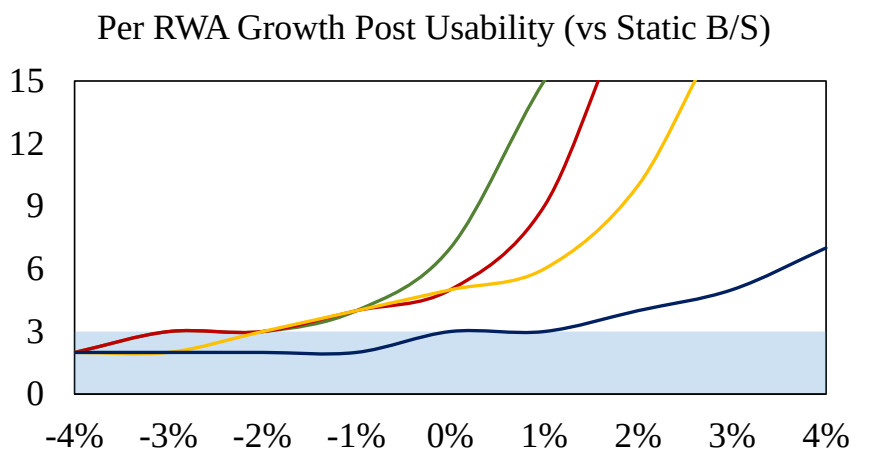


- For our analysis, we assume:
  - The CET1 ratio of all banks in the sample to be at their medium-run target levels.
  - The bank has to fully rebuild an amount of CET1 equal to the buffer draw-down (% RWA).
- By doing this, we are implicitly assuming that capital buffers are all structural (i.e., CCoB-like, with a 100% rebuild probability).
- However, the *ex-ante* rebuild probability of cyclical buffers (i.e., CCyB) will generally be <100% as these are state-contingent, and the future states that may justify different buffer levels are unknown *ex-ante*.
- Therefore, a higher proportion of cyclical buffers within a bank's CBR will generally translate into a reduction in the amount of CET1 to be rebuilt, making buffer usability less punitive.

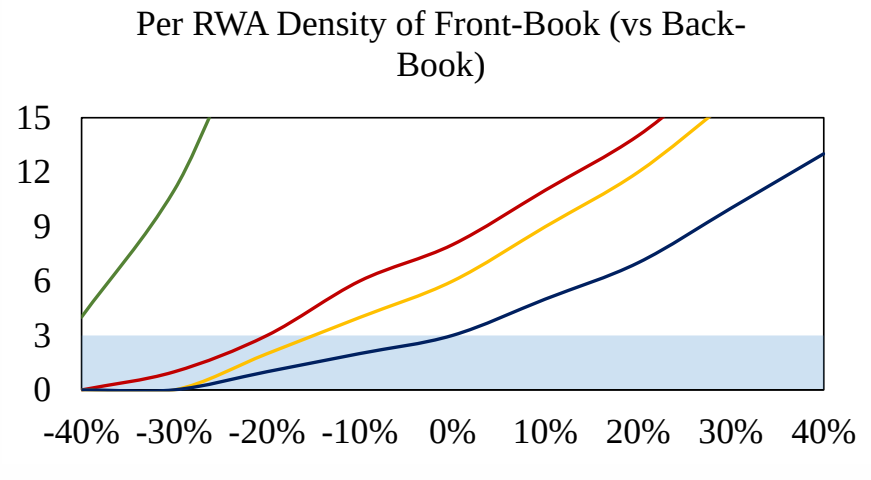
Sensitivity analysis (draw-down = 2.5% RWA)

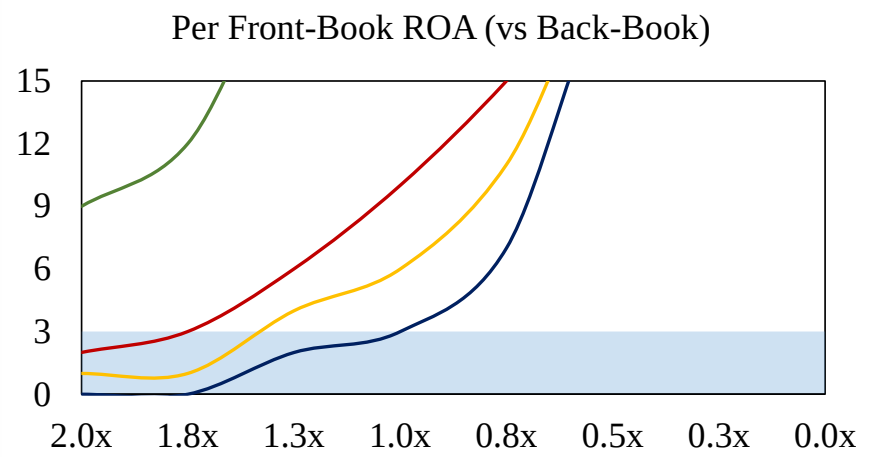
#Years to rebuild buffers





#Years to reach required fair value





Enhancing buffer usability

Capital Buffer Usability: Success Rates, Overall and Per Hurdle, Across Different Scenarios and Policy Options

Capital Buffer Usability Rate(s) and Select Policy Impacts, Overall and Per Hurdle	Capacity Hurdle	Supervisory Hurdle	Management Hurdle	Capital Buffer Usability	Pro-forma Impacts (System-wide) in t = 0			
	Capital Buffer Availability[1]	Years to Rebuild Buffers[2]	Bank's Expected Equity FV[4]	Success Rate[5]	Δ Loans (%)	Δ RoCET1 (pp.)	Δ CET1 Leverage Ratio (pp.)	Δ CET1 Ratio (pp.)
Baseline under medium buffer use (2.5% RWAs)[6]	53.6	64.6	20.7	3.3	0.6%	0.2%	0.0%	-0.1%
With a higher (2x) CET1 leverage ratio requirement	53.6	61.5	4.4	1.8	0.3%	0.1%	0.0%	0.0%
Baseline @ CCyB = buffer use[7]	100.0	64.6	20.7	19.3	4.0%	1.2%	-0.2%	-0.5%
With policy (ECCyB)[8]	100.0	64.6	46.0	36.8	8.3%	2.2%	-0.5%	-0.9%
With policy (Govt. Guarantees)[9]	71.2	98.7	68.8	58.6	12.1%	1.8%	-0.2%	-0.4%
With policy (ECCyB + Govt. Guarantees)	100.0	98.7	79.3	73.3	16.0%	2.7%	-0.4%	-0.7%
Baseline under low buffer use (1% RWAs)[6]	70.0	95.4	20.7	5.9	0.5%	0.1%	0.0%	-0.1%
With a higher (2x) CET1 leverage ratio requirement	70.0	80.2	20.1	5.4	0.4%	0.1%	0.0%	-0.1%
Baseline @ CCyB = buffer use[7]	100.0	95.4	20.7	20.7	1.7%	0.5%	-0.1%	-0.2%
With policy (ECCyB)[8]	100.0	95.4	46.0	46.0	4.2%	0.9%	-0.3%	-0.5%
With policy (Govt. Guarantees)[9]	75.3	98.7	100.0	73.6	6.2%	0.9%	-0.2%	-0.3%
With policy (ECCyB + Govt. Guarantees)	100.0	98.7	100.0	98.3	8.5%	1.4%	-0.5%	-1.0%