



Macroprudential Policy tools and Frameworks

Advanced Program on Basel III

CAFRAL, RBI

Mumbai, India

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Agenda

- **Introduction: Microprudential vs Macroprudential**
- The Time Dimension:
 - Capital buffers
 - Other macroprudential tools
 - Implementation experience
- The Cross-sectional Dimension:
 - Systemic risk and policy framework for G-SIBs and D-SIBs



Microprudential vs Macroprudential Approach

	Microprudential	Macroprudential
Focus	limit distress of individual institutions	limit financial system-wide distress
Key Objective	consumer (investor/depositor) protection	avoid output (GDP) costs linked to financial instability
Correlations and common exposures across institutions	useful to understand	critical
Calibration of prudential controls	in terms of risks of individual institutions; bottom-up	in terms of system-wide risk; top-down

*As defined, the two perspectives are intentionally stylised in order to highlight two orientations that coexist in current prudential frameworks

**Adapted from Borio, C (2003): "Towards a macroprudential framework for financial supervision and regulation?", CESifo Economic Studies, vol 49, no 2/2003, pp 181–216. Also available as BIS Working Papers, no 128, Basel, February.

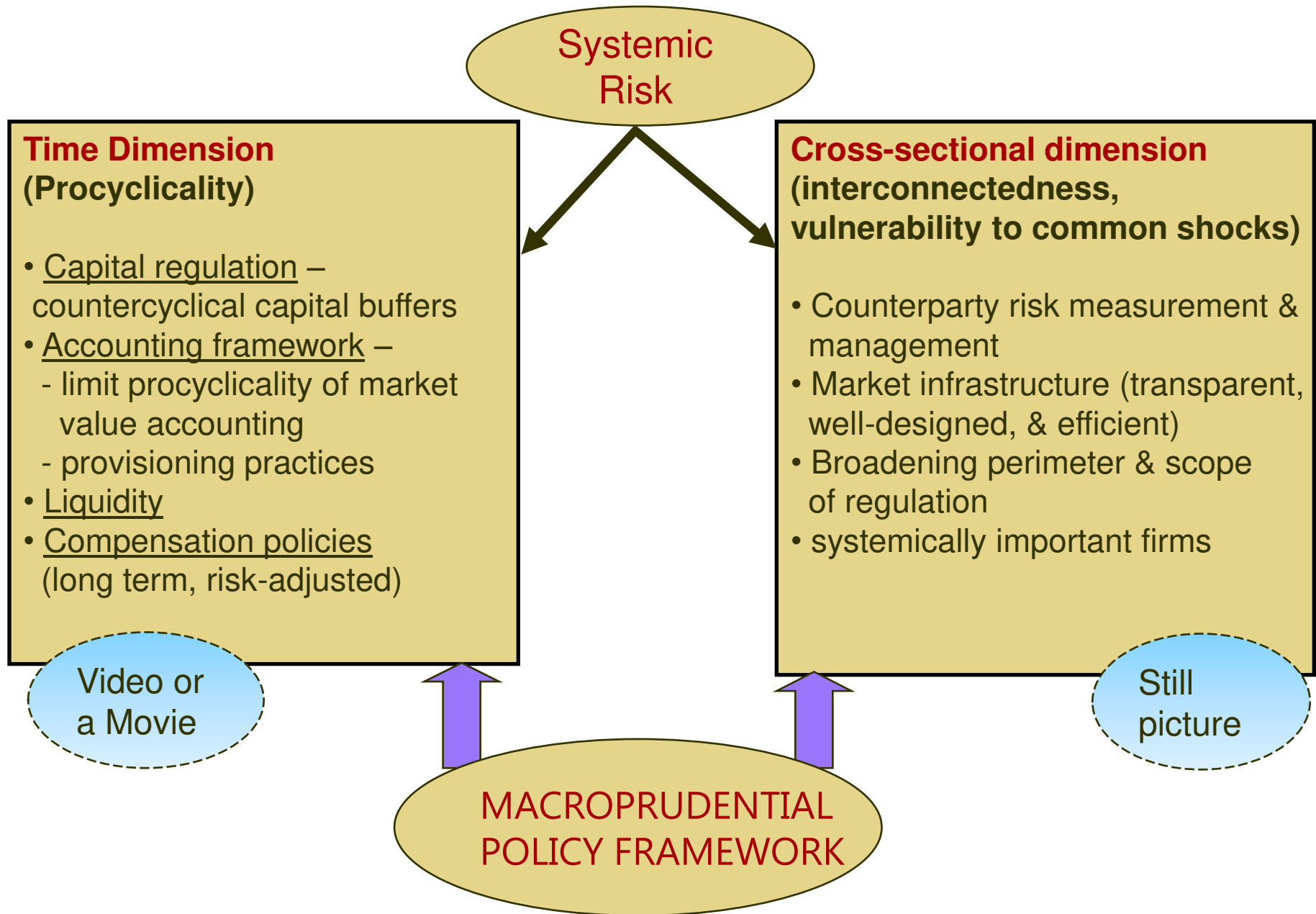


Macroprudential Policy

- Macroprudential: Macro and Prudential
- Objective:
 - to limit systemic risk – the risk of widespread disruptions to the provision of financial services that have serious negative consequences for the economy at large
- Scope:
 - Focus -financial system as a whole (including the interactions between financial & real sectors) as opposed to individual components (that take rest of the system as given).
- Instruments and associated governance:
 - Use of primarily prudential tools calibrated to target the sources of systemic risk.
 - Any non-prudential tools that are part of the framework need to clearly target systemic risk.

Source: FSB, IMF, BIS, “Macroprudential Policy Tools and Frameworks- Progress Report to G20” 27 Oct 2011





Potential Macroprudential Instruments/Tools

Time-varying Risk			
Key Amplification Channels/Tools	Leverage	Intra-Financial system activity	Maturity transformation
Balance Sheet Tools	<ul style="list-style-type: none"> - Countercyclical capital buffer - Distribution Restrictions - Leverage Ratios 		Time-varying liquidity buffers
	<ul style="list-style-type: none"> -Sectoral Capital requirements (real eco lending) -Time-varying provisioning requirements 	<ul style="list-style-type: none"> -Sectoral Capital req (intra-fin system activity) -Time-varying liquidity buffers 	
Terms & conditions of transactions	<ul style="list-style-type: none"> - LTV - Loan to Income restrictions 	-Margining requirements	
Market Structures		-Use of central counterparties	

Cross-sectional risk: Central Counterparties, SIFIs, Shadow Banking



Capital and Capital buffers

- Good quality Brakes & Airbags
- Safe distance – normal times
- Safe distance – not normal times



Capital buffers: Capital Conservation
Citigroup- compensation & benefits statistics (USD million)

Year	Net Income	Compensation & benefits
2003	17,853	20,719
2005	24,589	25,772
2006	21,538	30,277
2007	3,617	34,435
2008	(27,684)	32,440

- Compensation & benefits increased during bull market years: 2003-2006
-But remained at old levels even during losses

Source- Andrew M Cuomo, Attorney General, State of New York



Capital conservation?

	Losses in 2007 (bn)	decline in Stock value	CEO compensation
Countrywide (now BoA)	\$1.6 bn	80%	Mr. Mozilo – <ul style="list-style-type: none"> ● Compensation - \$120 million ● Stocks of countrywide
Merrill Lynch (now BoA)	\$10 bn	45%	Mr O'Neal – \$161 million retirement package
CitiGroup	\$10 bn	48%	Mr. Prince- <ul style="list-style-type: none"> ● Performance Bonus- \$10 million ● Stock options- \$28 million ● Perks- \$1.5 million (per annum)

Source- US Congressional hearings



Capital conservation – Best Practices vs. Actual Practices

lessons from football ??

“We are an old-fashioned business, not a quoted plc, and we don't pay dividends to shareholders”.

- Peter Robinson Chief Executive, Liverpool FC in 1996

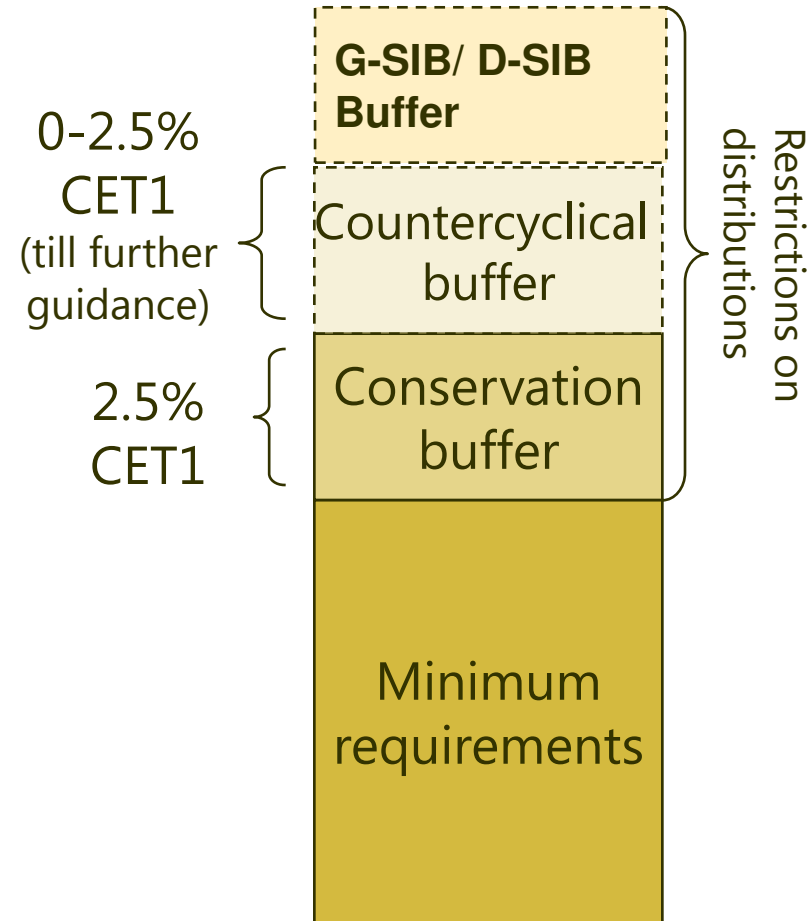
- UK- £85 bn extra capital generated during 2000-07[#], if
 - reduced dividend payouts ratios by a third - £20 bn
 - payouts to staff trimmed by 10% - £50 bn
 - no dividends in case of annual loss - £15 bn
- 2006-07 Global banks- net income fell by over 20% but dividends grew by 20%.
- 2008- global banks made losses totalling \$60 bn, but on average still made dividend payouts of over \$60 bn

The capital infusion in UK banks was less than £85 bn



The functioning of the capital buffers

- The capital conservation buffer establishes a fixed range above the minimum CET1 requirement. When a bank's CET1 ratio falls into this range it becomes subject to restrictions on distributions
- The countercyclical capital buffer works by extending size of capital conservation buffer during periods of excess credit growth



Countercyclical buffer could be met with CET1 or other fully loss absorbing capital beyond CET1.
Till further guidance, it will be CET1



The Capital Buffers

1. Capital Conservation Buffer

- Establishes buffer above the minimum requirement - banks to build capital buffers in good times (by reducing discretionary distributions of earnings)
- Draw down buffers during stress
- Strengthens ability to withstand adverse environments, Greater resilience going into a downturn, Reduces procyclicality
- Requirement: CET1 = 2.5% of RWA
- Constraints imposed if CET1 ratio falls within buffer range:
 - On the distribution of dividends, on bonuses and share buybacks
- Supervisory discretion to impose time limits on banks operating within the buffer range

2. Countercyclical Capital Buffer

- To protect banking sector from periods of excessive aggregate credit growth (private sector credit-to-GDP gap) often associated with system-wide risk
- Not about solvency of a bank in first instance (covered by min. capital req.)
- Potential moderating effect on credit cycle (Potential positive side benefit, not primary objective)
- Extends capital conservation buffer (i.e. to be met with CET1 capital)
- Buffer range between 0 - 2.5% of RWA
 - Deployed during build-up phase of system-wide risk
 - Deactivated when system-wide risk dissipates
- Pre-announce decisions to raise buffer levels by up to 12 months



Capital conservation buffer - framework

Year 2020	Year 2021
CET1 = 5.5%, Conservation ratio = 80%	<ul style="list-style-type: none">- Distributions not more than 20% in 2021- or else, raise capital (non-Govt. sources)- discuss with supervisor as a part of capital planning process

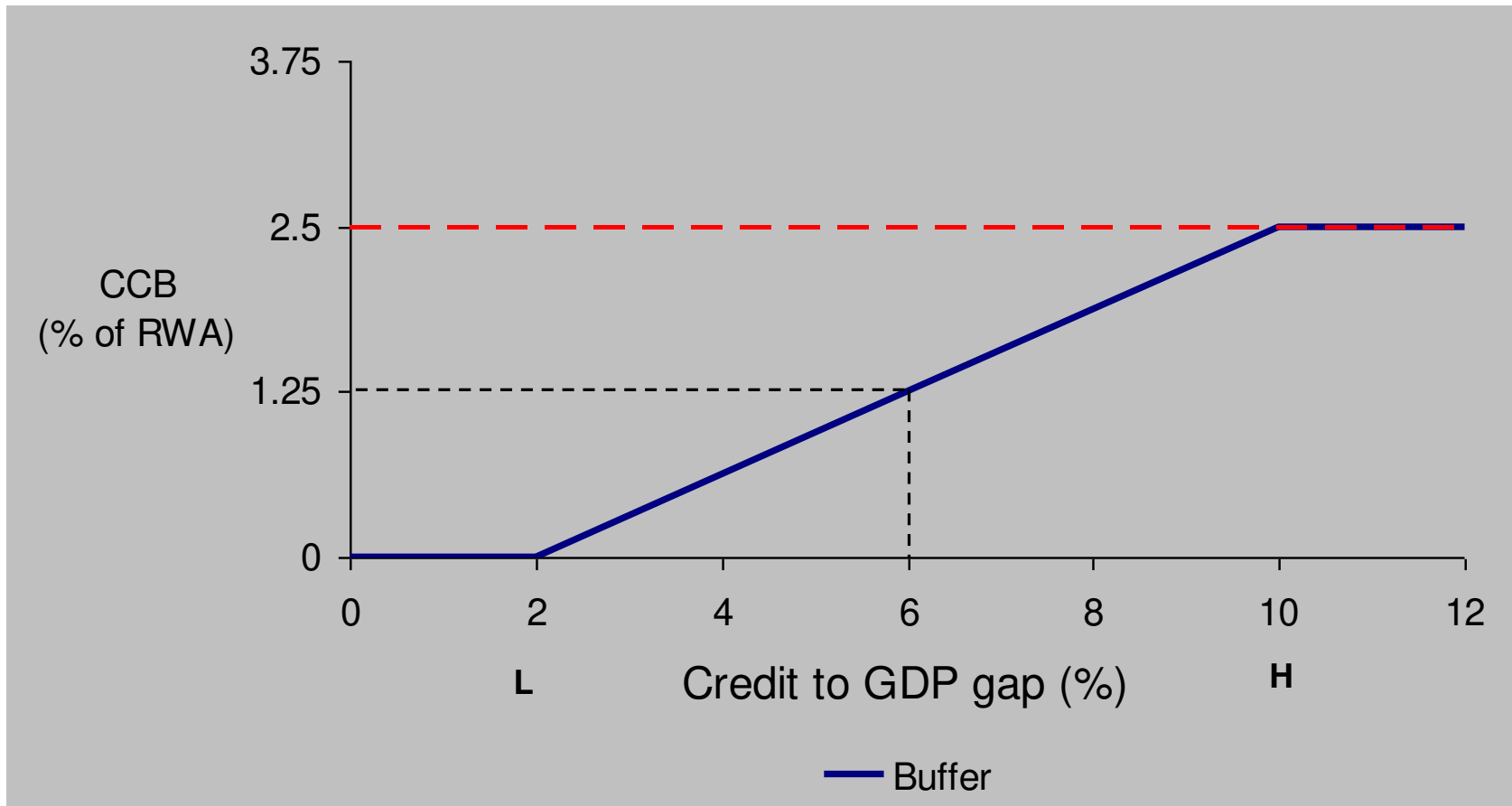
Quiz-

A bank has CET 1 ratio of 8% and its total capital ratio is also 8%. Bank's capital consists of only CET1 elements.

Can it be subject to restrictions on distributions under capital conservation buffer requirement of 7% CET1 ($4.5+2.5= 7.0\%$)?



CCB and Credit to GDP Gap

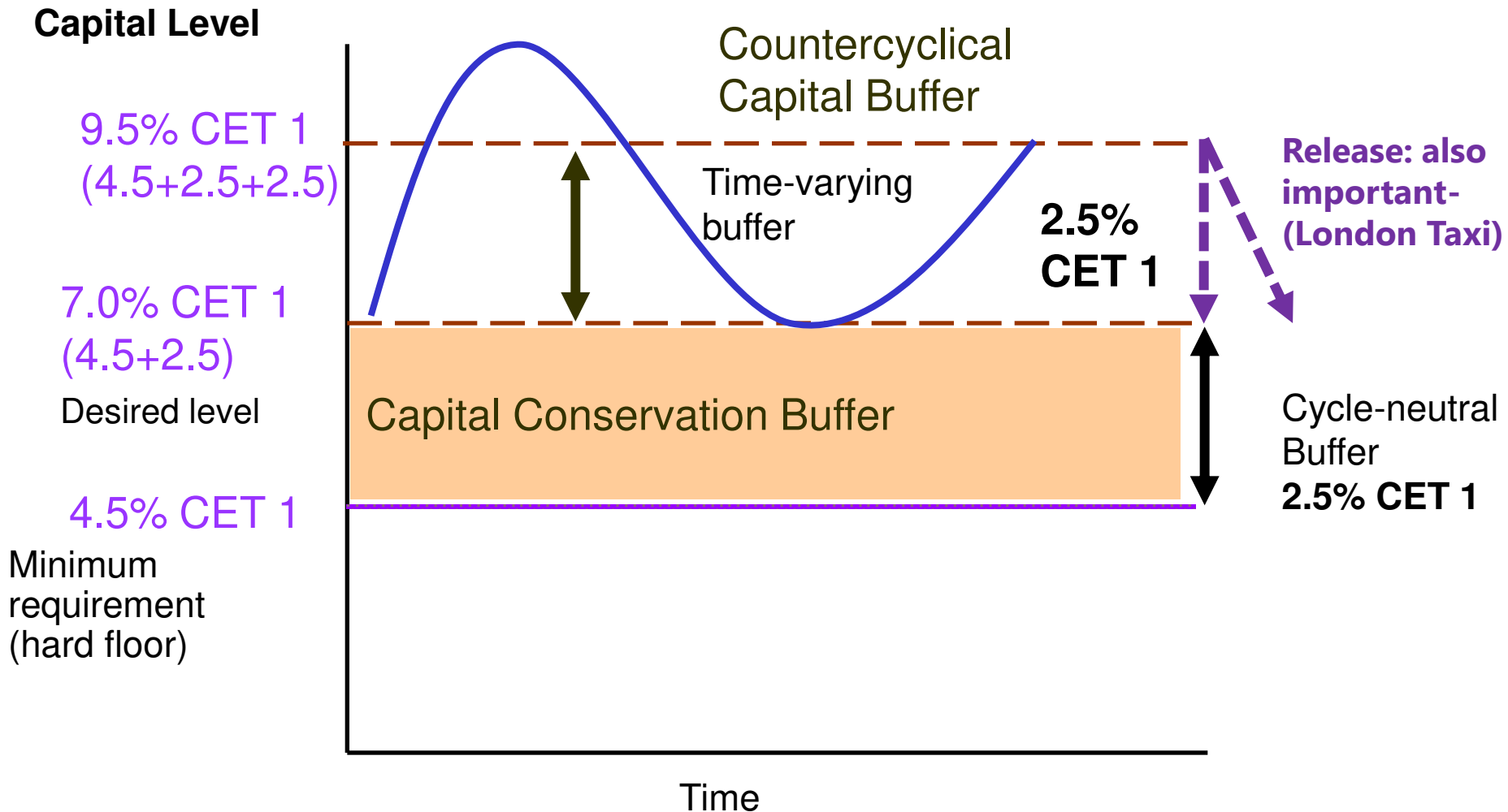


Example: Suppose the GAP = 6%
 $CCB = [(6 - 2) / 8] \times 2.5 = 1.25$

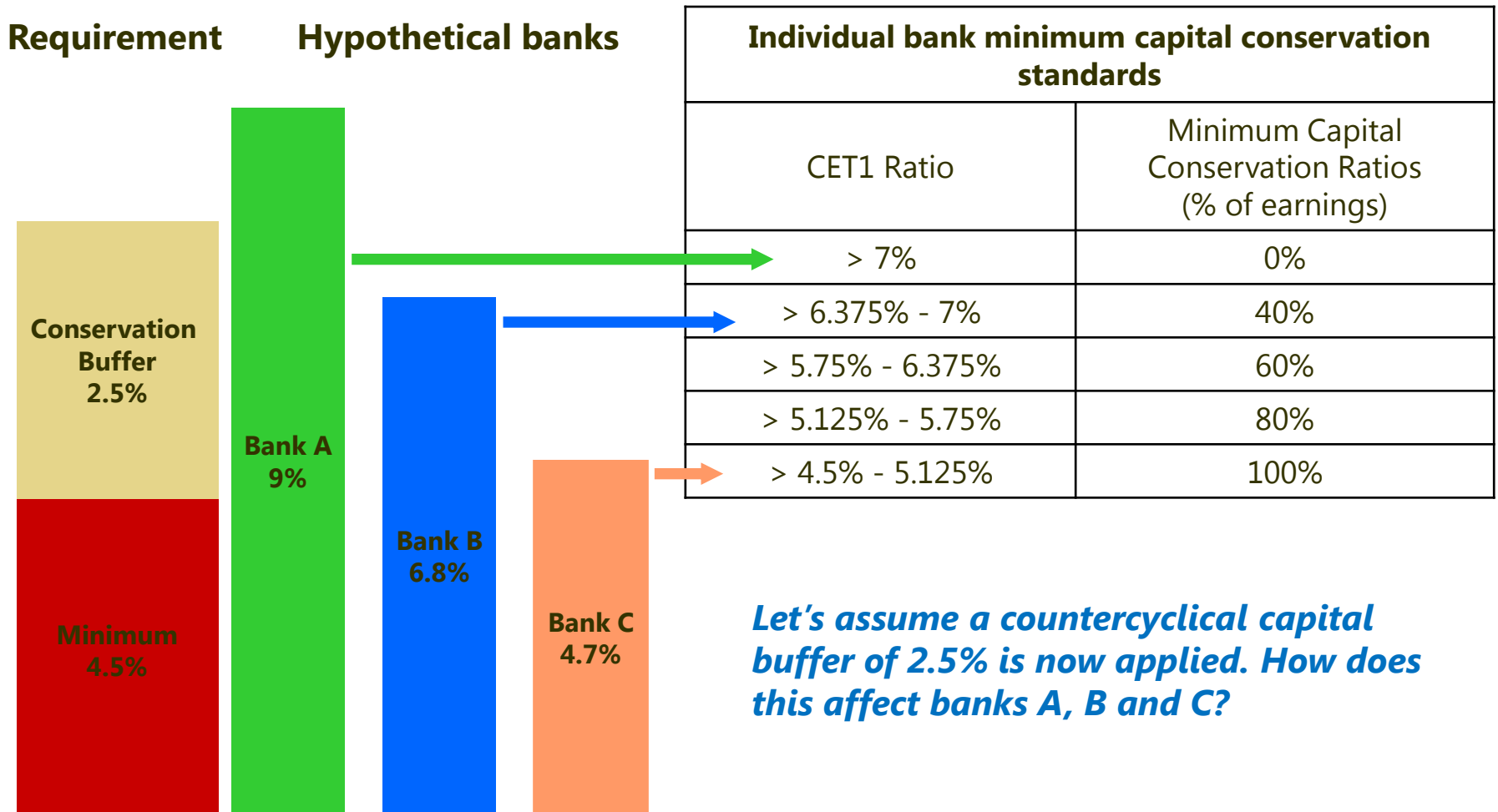
CCB = 0 if credit/GDP gap is equal to/below 2, CCB = 2.5 if credit/GDP gap is equal to/above 10%. For credit/GDP gap between 2 and 10 percent the buffer is calculated as 2.5/8 times the value of the credit/GDP gap exceeding 2 per cent.



Capital buffers: An illustration

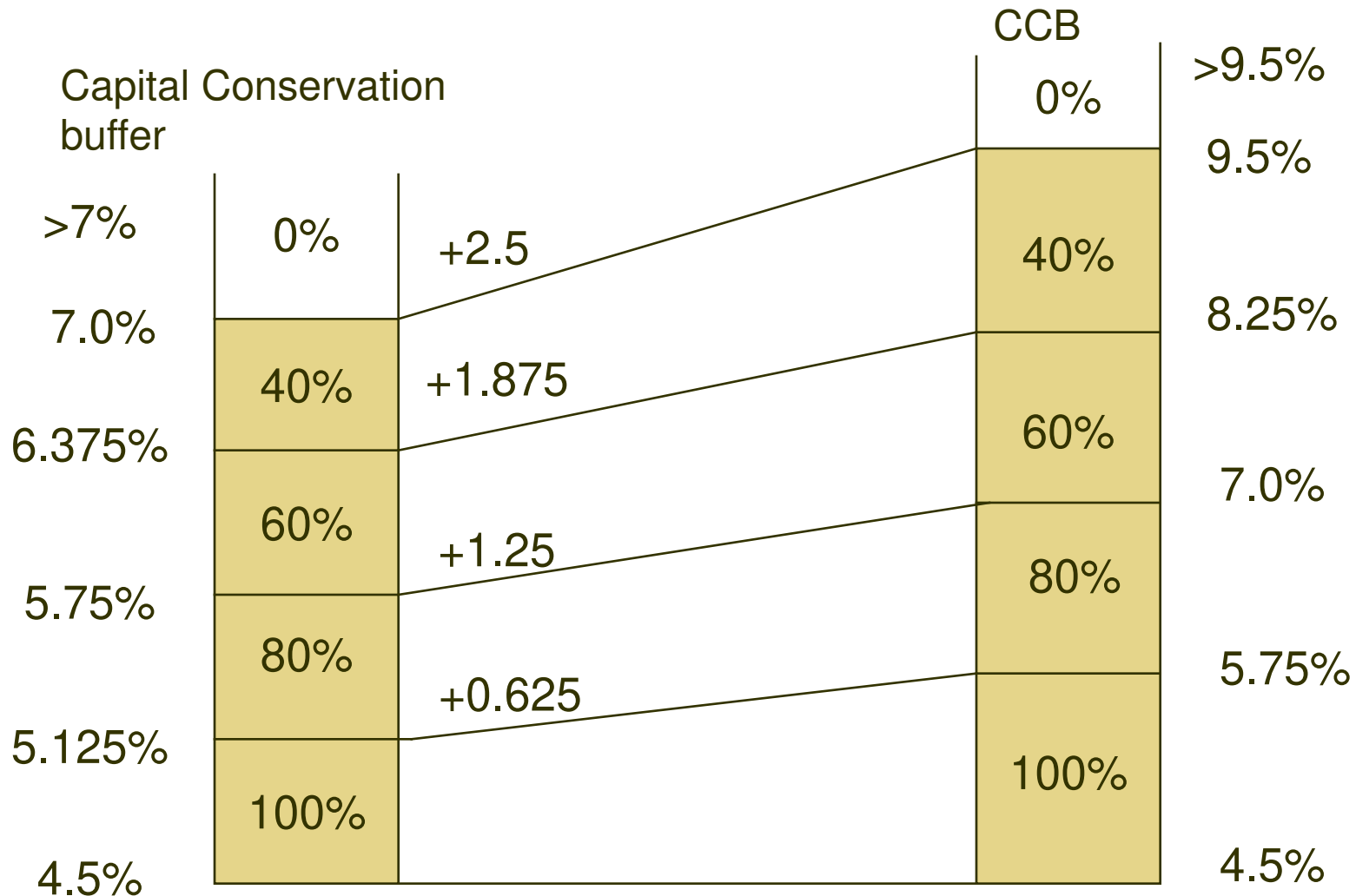


Conservation requirements: An illustration

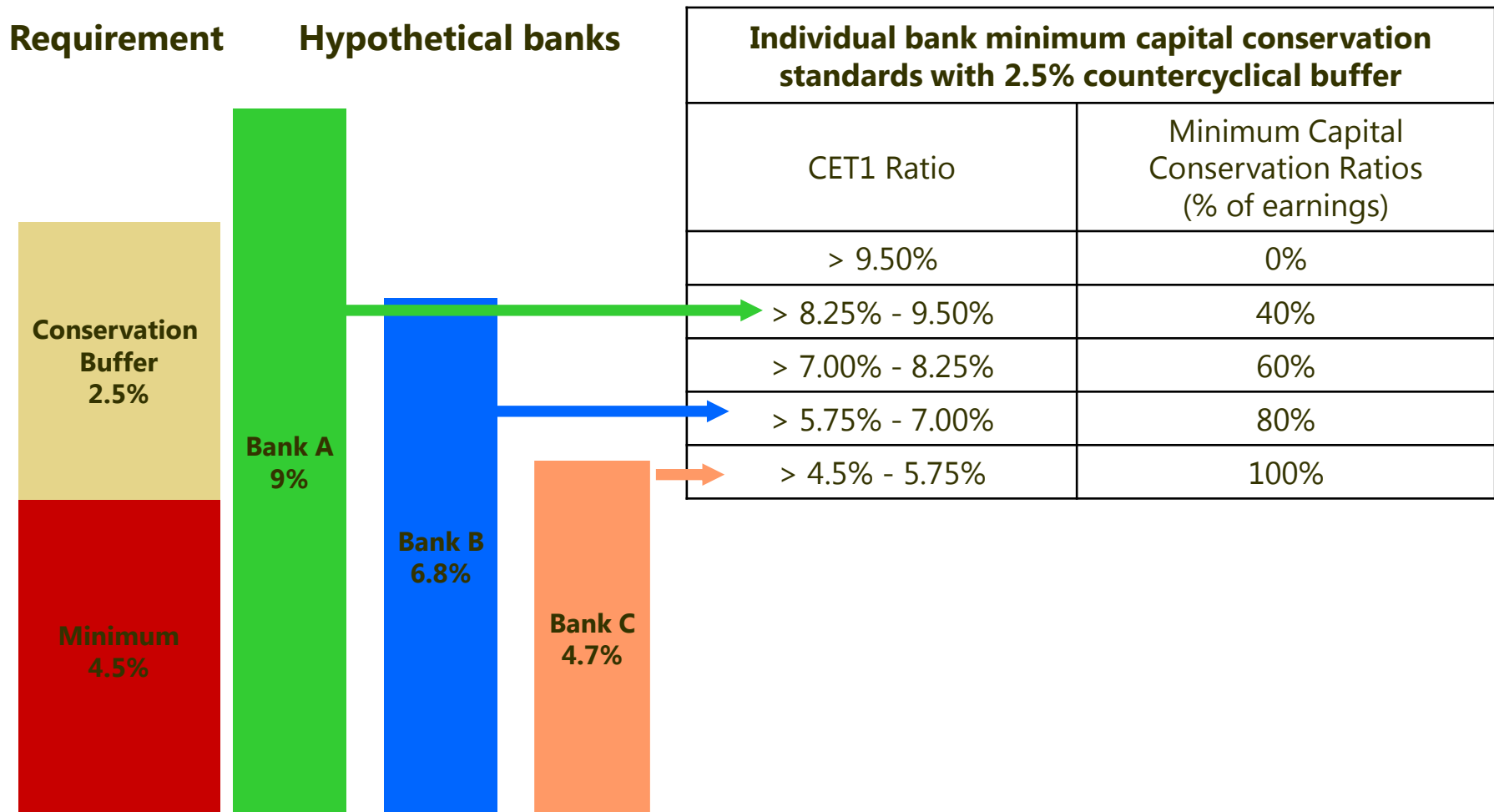


Let's assume a countercyclical capital buffer of 2.5% is now applied. How does this affect banks A, B and C?

CCB: An extension of capital conservation buffer



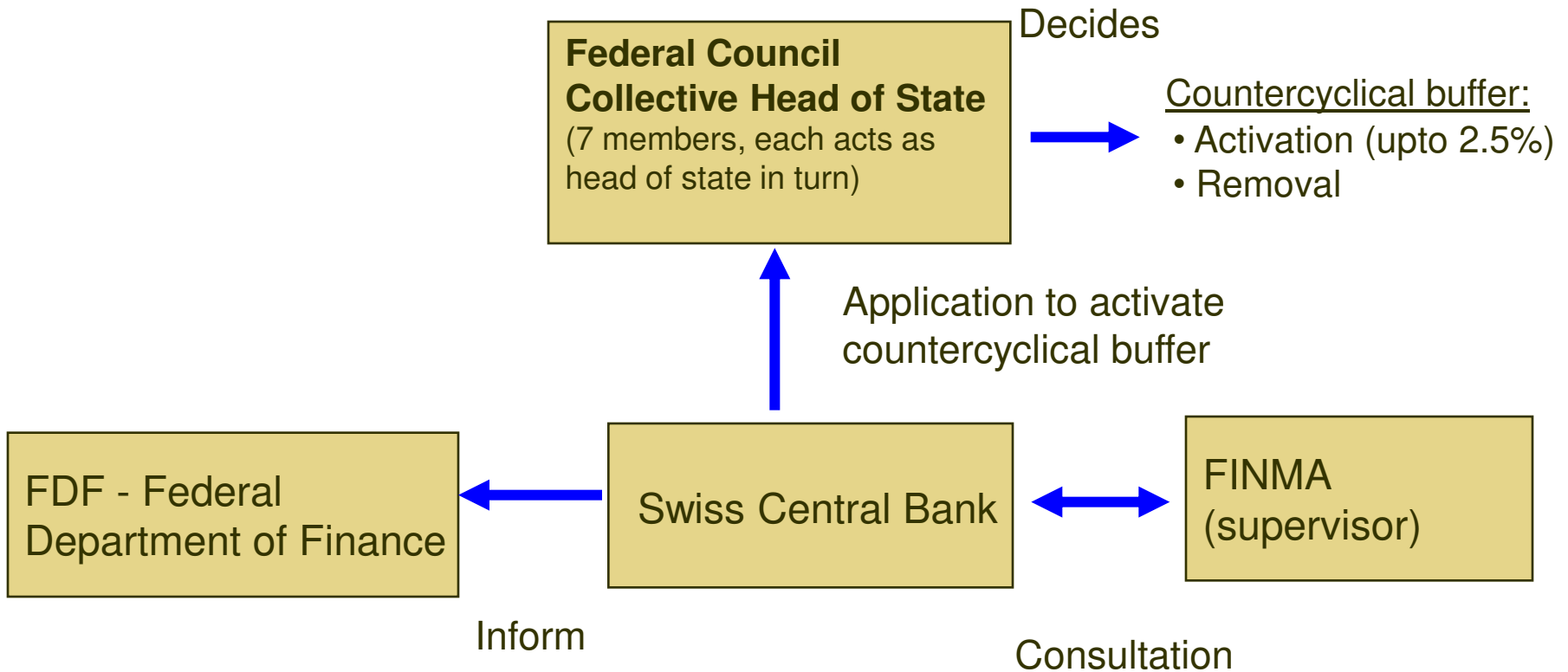
Conservation requirements with 2.5% countercyclical capital buffer: How are Banks A, B and C affected?



Implementation of macroprudential tools



Operation of Countercyclical Capital Buffer: Switzerland



The Swiss Approach: Implementing CCB

- 13 Feb 2013- Federal Council decided to activate sectoral countercyclical capital buffer **(CCB) of 1%** on loans secured against residential properties in Switzerland
 - Risk-weighted, direct or indirect mortgage-backed positions secured by residential property
 - Deadline for compliance – 30 Sept 2013 (in six months+)
 - Context- strong growth in both bank credit and real estate prices over last several years, resulting in imbalances in residential mortgage and real estate markets. Imbalances intensified in second half of 2012 – risk to banking sector stability & hence Swiss economy
- 23 Jan 2014 - **Sectoral CCB increased from 1% to 2%**, to be implemented by 30 June 2014 (less than six months)
- FINMA to oversee the implementation of CCB
 - Supervisory review - capital planning by banks
 - Incidentally, in Feb 2013, FINMA had recommended to the SNB that CCB should not yet be activated in light of supervisory measures taken:
 - increased review activities, stress tests, stringent self regulation and capital increases for specific banks



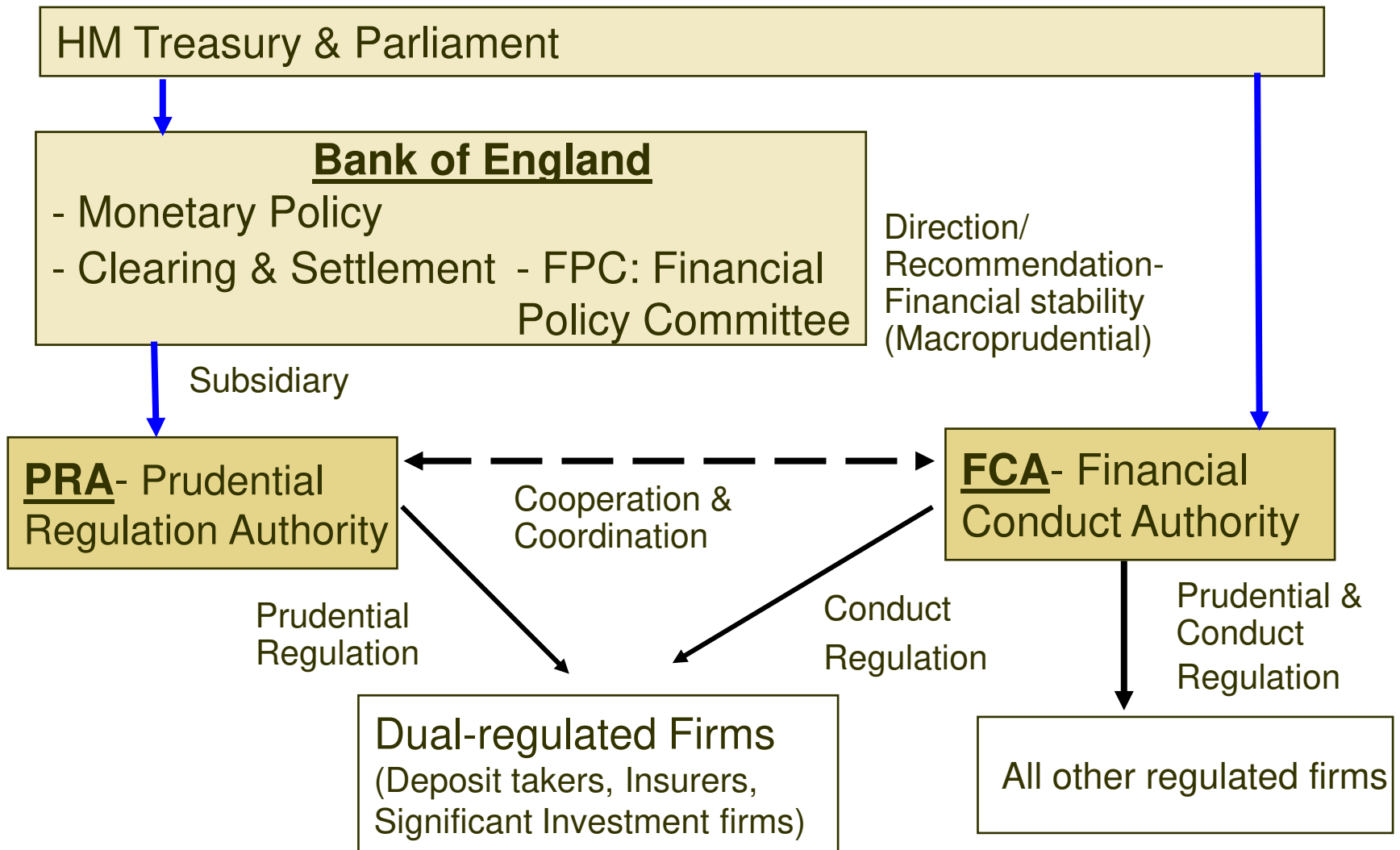
The Swiss Approach: Implementing CCB

Indicators used -

- Mortgage volume indicators –
 - significant and rapid increase of the ratio of mortgages to gross domestic product (GDP) observed
- Real estate price indicators-
 - strong growth of real estate prices significantly exceeding historical averages (can not be justified based on fundamental economic factors) observed
- Additional indicators-
 - measures of banks' risk-taking such as interest-rate risk, interest-rate margins, credit-condition indicators and leverage.



UK: New Regulatory Structure – post 2012



UK: recent macroprudential measures – June 2014

- Jan 2014 – FPC outlined 18 indicators for countercyclical capital buffer:
 - Bank balance sheet stretch: capital, leverage, average RWA
 - Non-bank balance sheet stretch: Credit to GDP ratio & Gap
 - Market conditions: intt. Rates, corporate bond spreads, etc.
- June 2014- FPC: risk of loose underwriting standards, further significant rise in the number of highly indebted households
- Interest rate stress test: whether borrowers could afford mortgages if intt. rates go up by 3% at any point over first five years of the loan
- From Oct 2014 - No more than 15% of the new mortgages at loan to income multiples of 4.5 and above
- UK banking sector stress-test exercise, to be completed by end-2014, will assess the resilience of UK banks to a marked fall in house prices and substantial increases in interest rates



India: Countercyclical capital buffer

- Credit-to-GDP gap for CCCB framework can have limitations for emerging economies
- In a structurally transforming economy with rapid upward mobility, growth in credit demand will expand faster than GDP growth:
 - shift from services to manufacturing where the credit intensity is higher per unit of GDP
 - need to double India's investment in infrastructure which will place enormous demand on credit
 - financial inclusion programme will bring millions of low income households into formal banking system with almost all of them needing credit.
- Lower threshold (L=3%), Basel (2%)
- Higher threshold (H=15%), Basel (10%)
- Sectoral approach also to be used



India: Supplementary Indicators

Statistically relevant indicators:

- **Incremental C-D ratio** for a moving period of 3 years
 - Predictor of overheating of credit market, high correlation with credit-to-GDP gap and Gross NPA growth; lag of over 12 months
- **Industrial Outlook (IO)** survey
 - Quarterly covering 2000 manufacturing companies, negative correlation with Gross NPA growth but not with the Gap; lag of over 12 months
- **Interest Coverage Ratio of corporate sector**
 - high correlation with credit-to-GDP gap but not GNPA
- Considered but not found suitable: Stock price, Gold price
- Promising but inadequate data points as of now: House Price Index, Credit Condition Survey



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Assessing Systemic Importance

- Systemically Important Financial Institutions (SIFIs)
 - Financial institutions whose **distress** or **disorderly failure** would cause **significant disruption** to the **wider financial system and economic activity**
 - Global SIFIs (G-SIFIs)
 - ... **significant dislocations** in the **global financial system** and **adverse economic consequences across a range of countries**

Source- Reducing the moral hazard posed by systemically important financial institutions – FSB Recommendations and Time Lines, 20 October 2010.



SIBs: The Policy Framework

Probability of Failure

1. Higher Loss Absorbency

- Addl. CET1
- High trigger CoCos

2. SIE: Sup Intensity & Eff.

Enhanced Sup expectations-

- Risk management functions
- RDA & RR
- Risk governance
- Internal controls

Impact of Failure

1. Recovery & Resolution Plan

- Low trigger CoCos
- Bail-in-debt

2. Resolvability Assessments

3. Resolution Authority

4. Crisis Management Groups

TBTF Subsidy

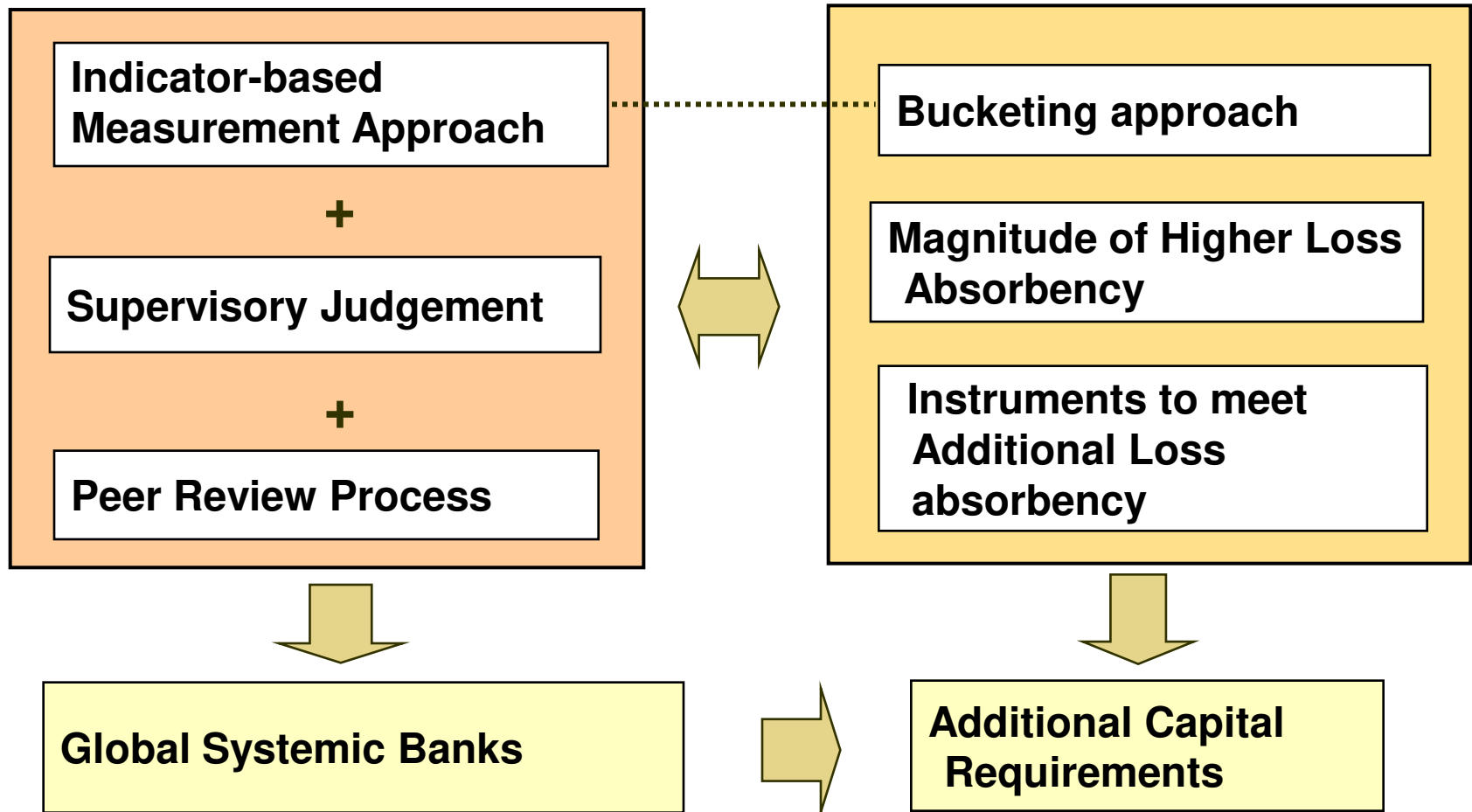
Reduce Moral Hazard

$$EI_{SIB} = EI_{non-SIB}$$

$$PD \times LGD = PD \times LGD$$



G-SIBs – Assessment Methodology



Indicator Based Measurement Approach – July & Nov 2013

5 Categories, each 20% weight	12 Individual Indicators	Indicator weights	Denominators: end-2012 G-SIB exercise (Euro)
Cross-jurisdictional activity (20%)	Cross-jurisdictional claims	10%	16,498,115,035,100
	Cross-jurisdictional liabilities	10%	16,093,124,462,531
Size (20%)	Total exposures as per Basel III Leverage ratio	20%	69,158,725,307,224
Interconnectedness (20%)	Intra-financial system assets	6.67%	8,918,054,432,043
	Intra-financial system liabilities	6.67%	8,162,462,456,211
	Securities outstanding (Nov 2011- <i>wholesale funding ratio</i> , <i>now under Ancillary Indicator</i>)	6.67%	11,221,392,343,225
Substitutability/ financial institution infrastructure (20%) (2013: CAP-500bps)	Assets under custody	6.67%	98,100,909,211,865
	Payments activity	6.67%	1,664,159,892,820,090
	Underwritten transactions in debt and equity markets	6.67%	4,547,081,105,541
Complexity (20%)	Notional amount of Over The Counter (OTC) derivatives	6.67%	651,933,169,050,368
	Level 3 assets	6.67%	643,920,283,937
	Trading and available-for-sale securities (July 2013- excluding HQLA)	6.67%	5,603,879,593,861

Bucketing Approach & HLA Requirement – Nov 2013

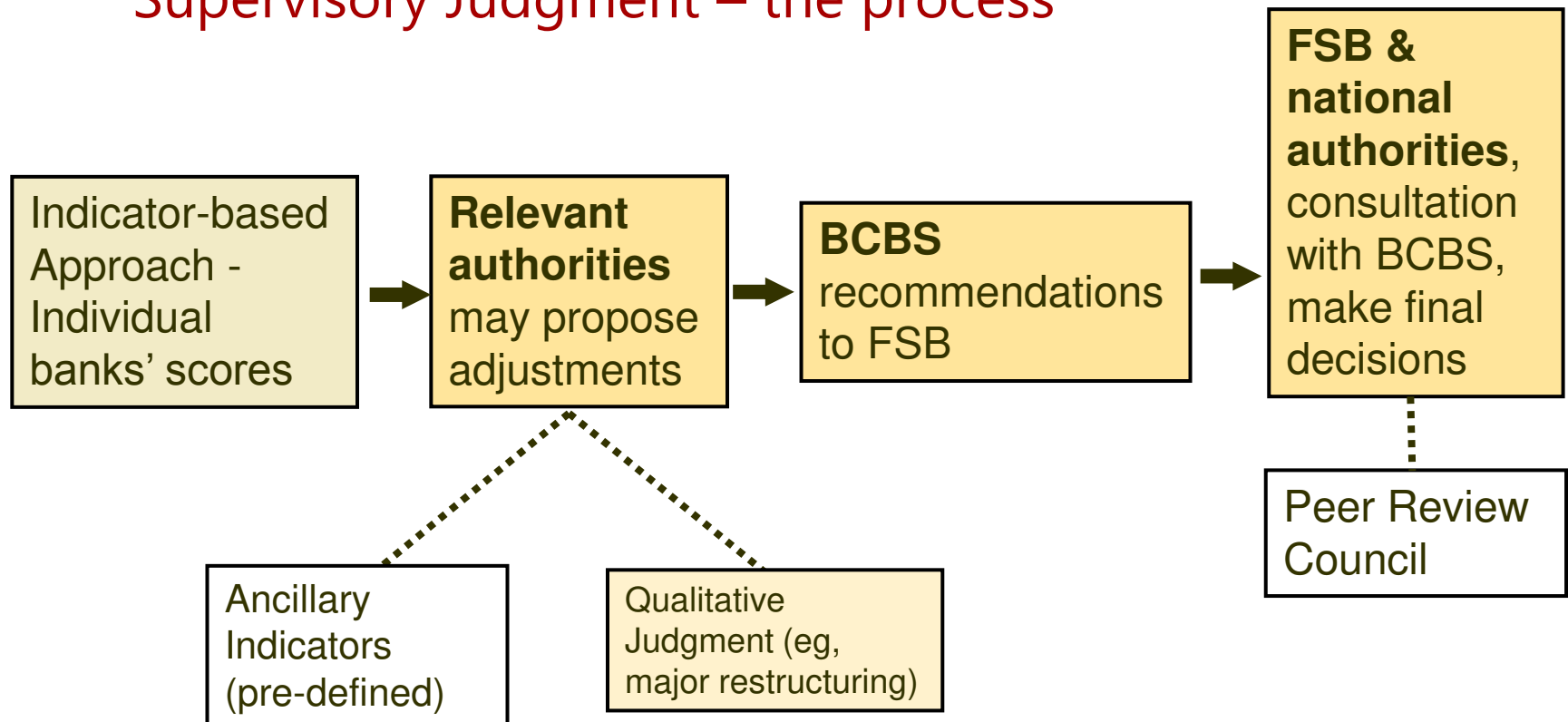
Bucket	Score range*	Higher loss absorbency requirement (Common equity as % of RWA)
5 (empty)	530-629	3.5%
4	430-529	2.5%
3	330-429	2.0%
2	230-329	1.5%
1	130-229	1.0%

*cut-off score for end-2012 exercise- 130 bp, equal bucket sizes at 100 bps. Scores -average of five category sub-scores, with substitutability/infrastructure capped at 500 bps. Bucket thresholds & the cap fixed for at least end-2013, '14 & '15.

- Avoid a fixed list (moral hazard, no incentives to reduce systemic relevance)
- continuous function (better on theoretical grounds), difficult to justify in practice. Equal sized buckets imply a linear function – higher capital for higher measure of systemic risk
- 4 buckets + 1 empty on top. If the top bucket is filled, then add a new empty one (incentive to reduce systemic importance)



Supervisory Judgment – the process



Ancillary Indicators (end-2013 data collection exercise)

Item No.	Ancillary Indicators (end-2013 data collection exercise)
14a)	Total liabilities
14b)	Retail funding
14c)	Wholesale funding dependence ratio (the difference between items 14a and 14b, divided by 14a)
14d)	Foreign net revenue
14e)	Total net revenue
14f)	Total gross revenue
14g)	Gross value of cash lent and gross fair value of securities lent in securities financing transactions (SFTs)
14h)	Gross value of cash borrowed and gross fair value of securities borrowed in SFTs
14i)	Gross positive fair value of over-the-counter (OTC) derivatives transactions
14j)	Gross negative fair value of OTC derivatives transactions
14k)	Number of jurisdictions

- BCBS will analyse the above data (Details of the analysis methodology not mentioned)

Two ancillary indicators (i) Peak equity market capitalisation and (ii) Unsecured settlement/ clearing lines provided, which were included in the end-2012 MPG Data Collection Exercise were removed from the end-2013 exercise.

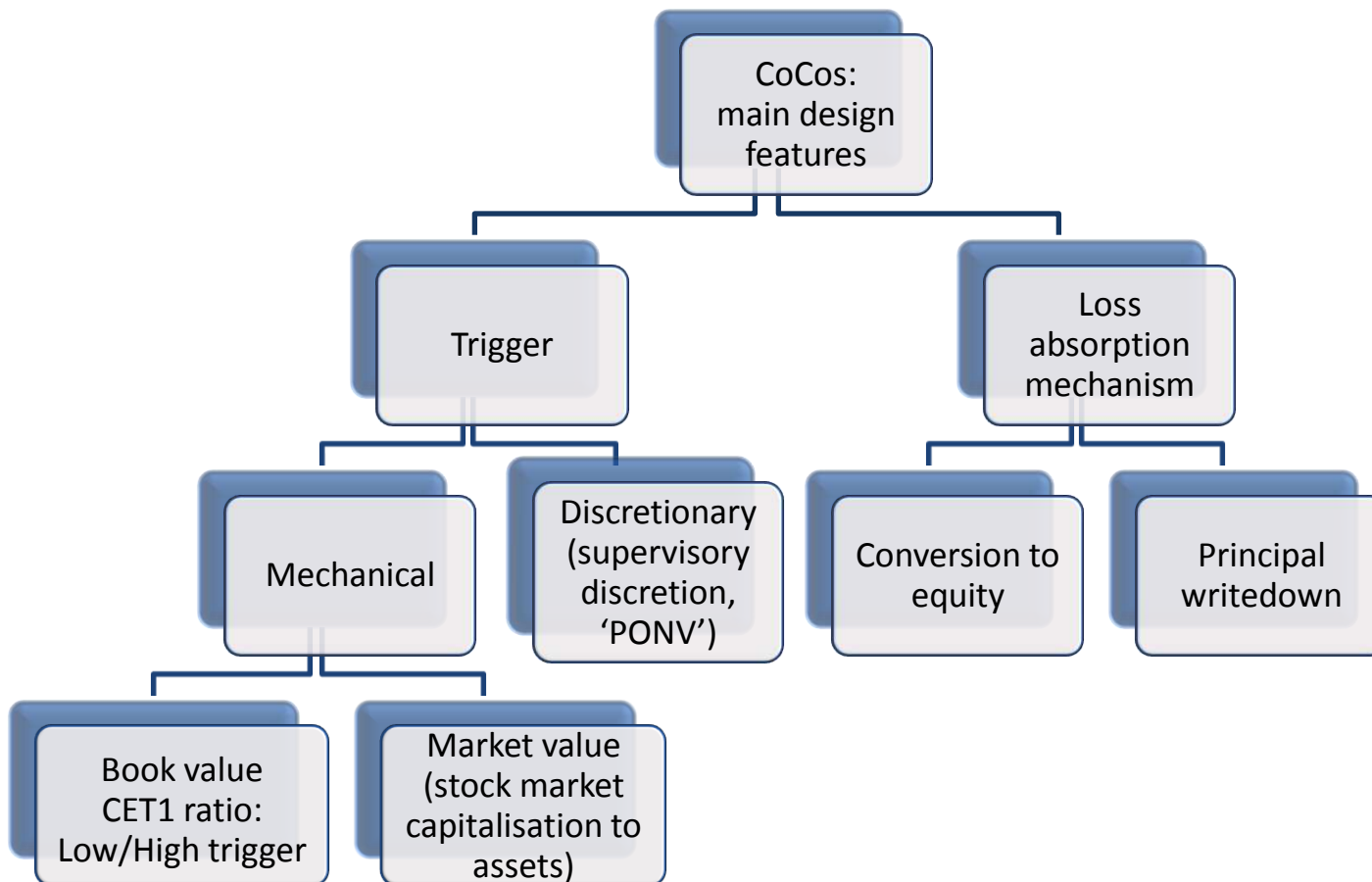


Instruments to meet additional loss absorbency requirement

- To meet objective, must be fully loss absorbing capital on a going-concern basis
 - Meet additional going-concern loss absorbency requirement with CET 1 only
- Bail-in debt and low-trigger contingent capital (“CoCos”) help in resolution but not on a going-concern basis
- Continue to review high-trigger contingent capital and support its use to meet higher national loss absorbency requirements than the global requirement



High Trigger Contingent Capital: CoCos



Year 1	Year 2	Year 3
Normal	Normal	Stress, CET 1 < 7%
8% coupon	8% coupon	Equity (via conversion or write down) Cost-effective, going-concern capital



CoCos

Issuer	Coupon	Maturity (year)	Amt. (m)	Capital trigger	Loss absorption mechanism	Ranking in liquidation	Point of Non-viability trigger	Regulatory call?
Barclays	7.625	2022	\$3,000	7%	100% principal writedown	Tier II	No	Yes
Credit Suisse	7.875	2041	\$2,000	7%	Equity conversion at higher of \$20 or current price at trigger	Tier II	No	Yes, at 10.2%
Lloyds	8.000	Perpetual	\$1,259	5%	Equity conversion	Tier II	No	No
Rabobank	6.875	2020	€1,250	7%	75% principal writedown	Tier II	No	No
Rabobank	8.375	Perpetual	\$2,000	8%	Principal writedown to cover capital shortfall. No write-up; can be written down more than once	Tier I	No	No
UBS	7.250	2022	\$2,000	5%	100% principal writedown	Tier II	Yes	Yes
UBS	7.625	2022	\$2,000	5%	100% principal writedown	Tier II	Yes	Yes

Source: Risk Magazine, July 2013



Nov 2013- List of 29 G-SIBs (28 in 2012)

Bucket	G-SIBs in alphabetical order within each bucket
5 (3.5%)	Empty
4 (2.5%)	HSBC, JP Morgan Chase
3 (2.0%)	Barclays, BNP Paribas, Citigroup, Deutsche Bank
2 (1.5%)	Bank of America, Credit Suisse, Goldman Sachs, Group Credit Agricole, Mitsubishi UFJ FG, Morgan Stanley, Royal Bank of Scotland, UBS
1 (1.0%)	Bank of China, Bank of New York Mellon, BBVA, Groupe BPCE, Industrial & Commercial Bank of China Ltd, ING Bank, Mizuho FG, Nordea, Santander, Societe Generale, Standard Chartered, State Street, Sumitomo Mitsui FG, Unicredit Group, Wells Fargo

Source: FSB "Update of group of G-SIBs", 11 Nov 2013

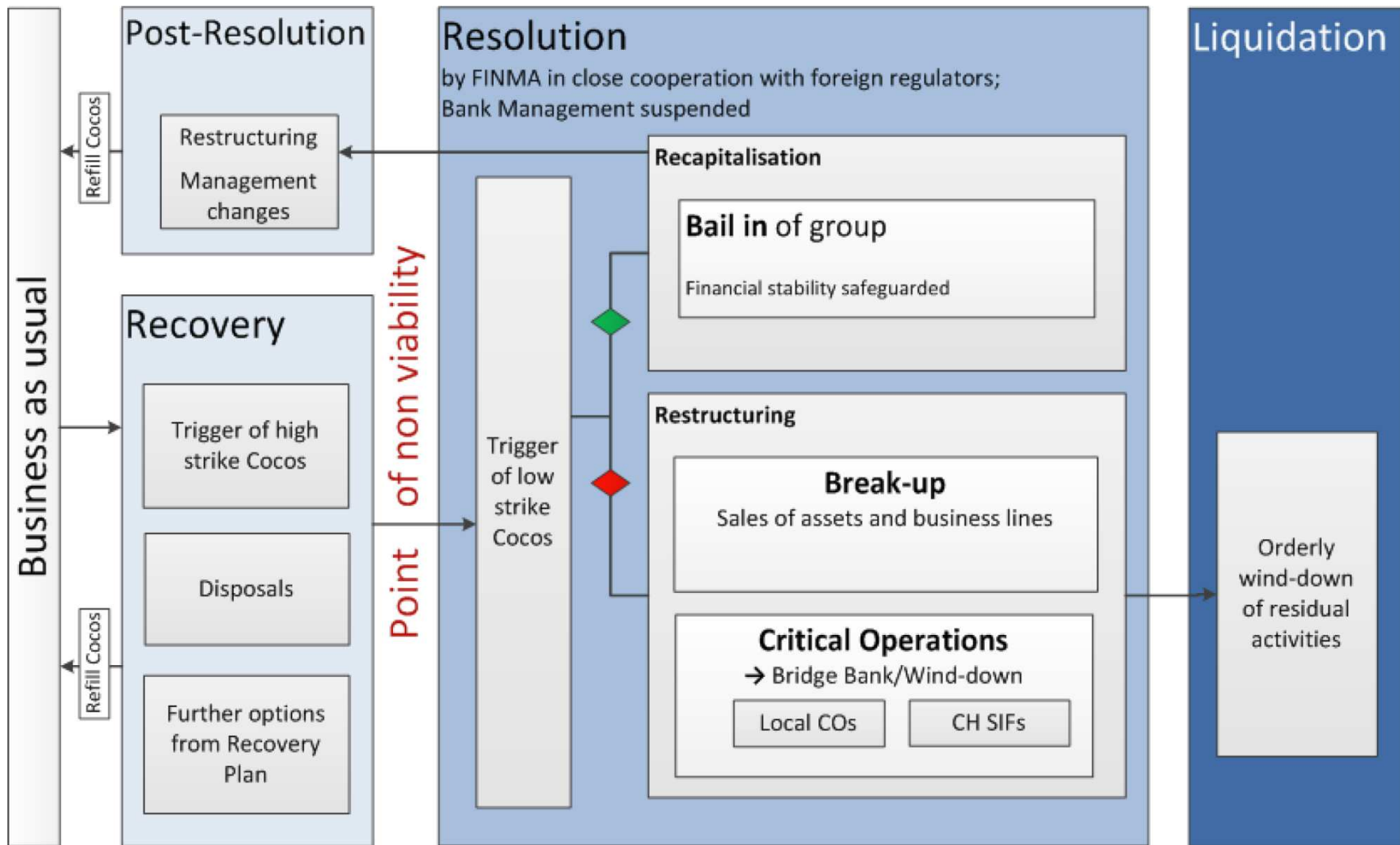


Transitional arrangements

	2011	2012	2013	2014	2015	2016	2017	2018	As of 1 January 2019
G-SIB Regime -To be phased-in in parallel with conservation & countercyclical buffers	Supervisory monitoring		Parallel run 1 Jan 2013 – 1 Jan 2017 Disclosure starts 1 Jan 2015				Migration to Pillar 1		
			3.5%	4.0%	4.5%	4.5%	4.5%	4.5%	4.5%
Capital Conservation Buffer						0.625%	1.25%	1.875%	2.50%
Minimum common equity plus capital Conservation & Countercyclical Buffers			3.5%	4.0%	4.5%	5.125%	5.75%	6.375%	7.0%
Phase-in of deductions from CET1 (including amounts exceeding the limit for DTAs, MSRs and financials)				20%	40%	60%	80%	100%	100%
Minimum Tier 1 Capital			4.5%	5.5%	6.0%	6.0%	6.0%	6.0%	6.0%
Minimum Total Capital			8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
Minimum Total Capital plus conservation buffer			8.0%	8.0%	8.0%	8.625%	9.25%	9.875%	10.5%
Capital instruments that no longer qualify as non-core Tier 1 capital or Tier 2 capital			Phased out over 10 year horizon beginning 2013						



Recovery and Resolution: One Approach (FINMA)



◆ Recapitalisation sources available to FINMA insufficient
◆ Recapitalisation sources available to FINMA sufficient

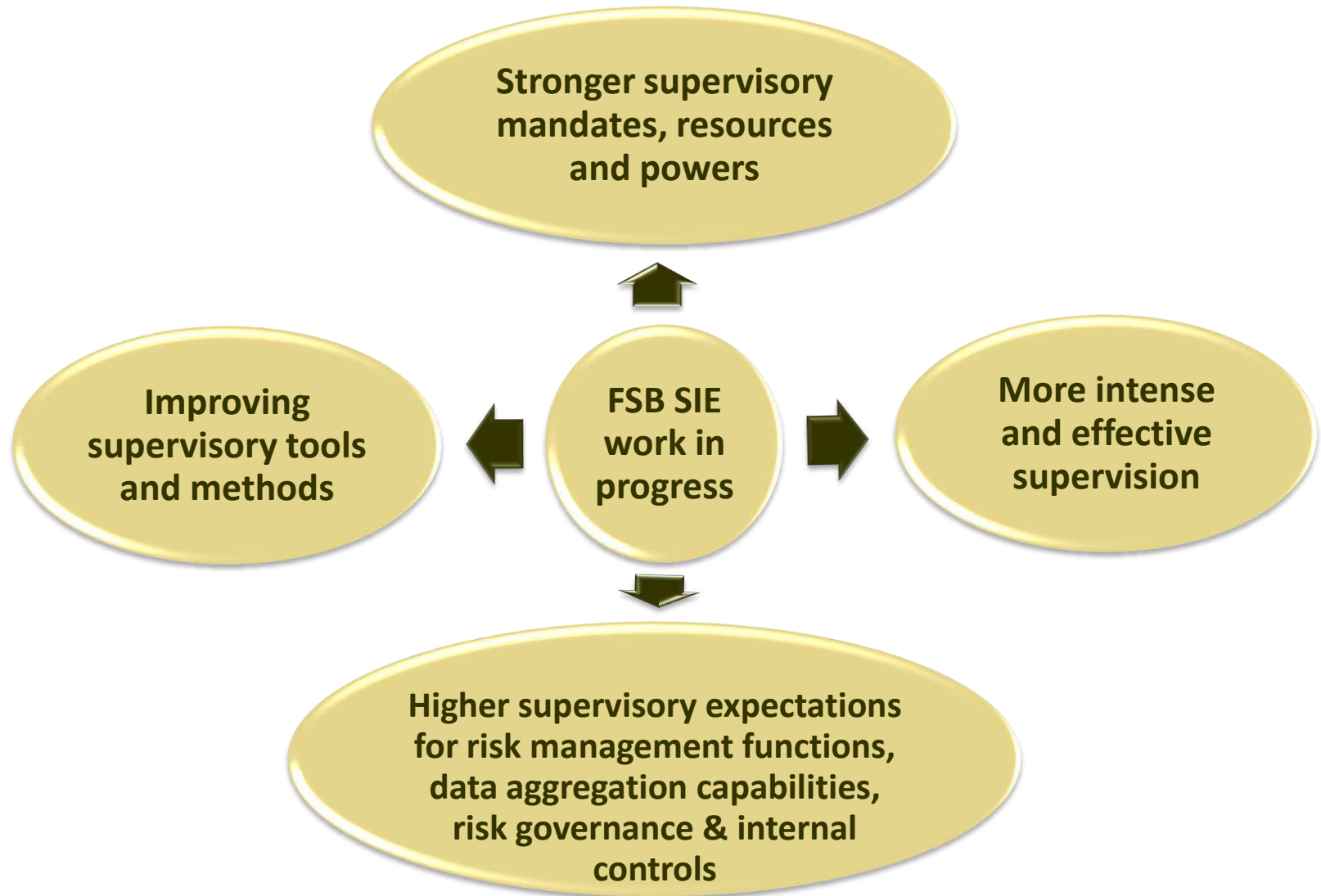


Resolution Strategies

Single Point of Entry	Multiple Point of Entry
- Only top-tier parent or holding company enters resolution	- Multiple (separable) parts of the group enter resolution
- Operating (domestic & foreign) subsidiaries remain open	Resolution of parts of the group should be possible without affecting the viability of other parts
Loss-absorption at parent- level through write-down/conversion	Loss absorption at local level (operating subsidiary or national/regional sub-holding)
Restructured parent or successor to parent serves as “source of strength” recapitalizing subsidiaries and down-streaming liquidity	Break up along national or regional and/or functional lines



SIFIs: Enhanced Supervision



India: RBI's D-SIB Framework

Category (weight)	Indicator	Indicator weight
Size (40%)	Exposure Measure for Basel III Leverage Ratio	40%
Interconnectedness (20%)	Intra Financial System Assets	6.67%
	Intra Financial System Liabilities	6.67%
	Securities Outstanding	6.67%
Substitutability (20%)	Assets Under Custody	6.67%
	INR Payments using RTGS & NEFT	6.67%
	Underwritten transactions in debt & equity markets	6.67%
Complexity (20%)	Notional Amount of OTC Derivatives	6.67%
	Cross Jurisdictional Liabilities	6.67%
	Securities under HFT & AFS categories	6.67%



RBI (India): Bucketing for DSIBs

Bucket	HLA (Additional CET 1 as % of RWA)
5 (Empty)	1.00%
4	0.80%
3	0.60%
2	0.40%
1	0.20%



RBI (India) : differences from G-SIB rules

	G-SIB rules	RBI DSIB framework
Sample of banks	75 largest banks	Leverage ratio exposure equal to or more than 2 % of GDP Additionally, 5 largest foreign banks
Categories and Indicators	5: cross jurisdictional activity, size, interconnectedness, substitutability, complexity	4: size, interconnectedness, substitutability, complexity For Complexity, Level 3 assets (as in GSIB rules) dropped, instead cross-jurisdictional liabilities added
Indicator weights	Equal with a cap on substitutability	Size – weight of 40%, 3 remaining weight of 20% each



Conclusion

- Macroprudential framework is evolving:
 - Institutional arrangements
 - Possible tensions between Microprudential and Macroprudential approaches
 - The importance of data
 - The role of judgement





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