

# Complex Bank Capital Regulations Provide Opportunities for Investors in Regulatory Capital Relief Transactions

February 2021

#### **Overview**

Reg cap transactions are an essential tool for banks to meet increasing capital requirements

Reg Cap market sees €100+

billion assets

referenced /

placed per

annum and

growing

€10+ billion risk

Bank capital requirements are extremely complex, ever changing, and increasing as regulators seek to reduce risks and eliminate loopholes, making it a tall order for banks to manage capital while conducting business profitably. Regulatory capital relief transactions ("reg cap transactions") are an essential capital management tool for banks. These transactions involve the sale, often in synthetic format, of the credit risk on a specific tranche of a specific portfolio of assets in exchange for payment of an ongoing risk premium. The bank reduces credit risk on balance sheet and frees up capital it would otherwise need to hold to support that credit risk. The synthetic risk transfer technology is similar to that used by Fannie Mae and Freddie Mac to transfer credit risk on more than \$30 bn of US residential mortgages under the CAS and STACR programs.

Reg cap transactions provide benefits to bank issuers in addition to capital relief. Banks can obtain a measure of risk relief, free up credit lines to large clients, and establish capital market benchmarks for pricing loans. The reg cap market has grown significantly in recent years, as banks have sought capital relief along with these other benefits. To date reg cap transactions have been issued primarily by European banks, but we expect US bank issuance to add to already significant market growth (as discussed below).



# Exhibit 1: Reg Cap Market Size

Source: European Banking Authority (EBA), Seer Capital Research and estimates

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Banks are required to hold more capital against certain assets than would be dictated by the true risk profile, generating opportunities for reg cap investors While investors in reg cap transactions focus on analyzing the assets in the reference portfolio, they must also understand the bank's capital management objectives. A bank may be subject to high capital requirements relative to the risk profile of a specific portfolio of assets because it has not obtained regulatory approval to allocate capital based on its own internal risk ratings, in which case it will have the appetite to offer reg cap investors an attractive coupon relative to the risk. The capital rules subject banks to homogeneous capital requirements against some portfolios that contain a range of credit risks. Such banks will obtain the same amount of capital relief whether they issue reg cap transactions backed by low-risk assets or high-risk assets from within these portfolios. Investors able to recognize these circumstances can be confident that they are gaining exposure to low-risk assets.

#### Exhibit 2: Illustrative Reg Cap Transaction Structure



15% risk weight for retained senior class of reg cap deal is based on Basel III framework

#### **Bank Capital Requirements and Instruments**

The rule of thumb is that banks are required to hold capital equal to 8% of risk-weighted assets (RWAs). As with most aspects of banking regulation, the reality is significantly more complicated. Generally, banks are subject to the following capital requirements:

- Common Equity Tier 1 (CET1), 4.5% of RWAs
- Tier 1 Capital, 6% of RWAs
- Total Capital, 8% of RWAs

Additional requirements include three types of buffers, all of which must be held in the form of common equity (CET1). The capital conservation buffer, fixed at 2.5% of RWAs, ensures that banks have an additional layer of usable capital that can be drawn to cover losses. If the buffer falls below 2.5%, restrictions are placed on capital distributions to replenish the buffer. The second buffer is the "countercyclical buffer" which ranges between 0 and 2.5% of RWAs. This buffer is set by

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regulators in each jurisdiction, increasing when aggregate credit growth is judged excessive and decreasing in a downturn to maintain the flow of credit. Due to COVID, the countercyclical buffer is currently set at 0% in the US and most European countries. A third buffer applies to banks deemed "systemically important financial institutions", which includes large global banks who are the typical issuers of reg cap deals. This "G-SIFI surcharge" can range up to 3.5% of RWAs (although the highest level currently assigned is 2.5%).

#### **Exhibit 3: Illustration of Bank Capital Requirements**



In addition to establishing minimum capital levels, regulations also specify which types of instruments issued by banks to raise capital may be treated as a type or "tier" of capital. CET1 must be common stock or retained earnings. Tier 1 capital can include "Additional Tier 1" instruments (AT1), which must be subordinated to depositors, general creditors, and subordinated debt; may not have a maturity date but may be callable in 5 or more years with any call or principal distribution subject to regulatory approval; and must be subject to conversion to common shares or writedown on certain triggers.

European banks can issue contingent convertible bonds ("CoCos") to meet Tier 1 capital requirements, and a market has developed for such instruments in recent years, while US banks issue a different type of subordinated debt. These instruments expose investors to a bank's entire balance sheet, rather than a specific portfolio of assets that can be analyzed, and are subject to a variety of risks that are difficult to quantify, including skipped coupon payments and uncertain call timing. Tier 2 capital is generally subordinated debt ranking higher in the capital structure than AT1 and bearing a fixed maturity date unlike AT1.

A bank's total RWAs against which it holds capital amount to the sum of the RWAs for credit risk, market risk, and operational risk. We focus on credit risk, as it generates the bulk of RWAs at most banks, and reg cap deals are generally aimed at reducing credit risk. Risk weights for credit risk are determined using two different approaches, the standardized approach and the internal ratings-based (IRB) approach, both as described below.

# Various required buffers mean that banks hold total capital of 15+% of RWAs, rather than 8% as commonly thought

Reg Cap deals offer investors much more transparency than AT1s / CoCos

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Capital required for credit risk is calculated as follows:

## Credit Risk Exposure \* Credit Conversion Factor<sup>1</sup> (CCF) = Exposure at Default (EAD) EAD \* Risk Weight % = Risk-Weighted Assets (RWAs) RWAs \* (8% Minimum Capital + Applicable Buffer %) = Total Capital Required

Undrawn revolvers are treated conservatively under the capital rules Capital required is determined based on exposure at default (EAD). This involves the application of a credit conversion factor (CCF) for revolvers and credit facilities. Many banks have completed reg cap transactions backed by revolvers to large corporates. Under the standardized approach, banks must apply a CCF to revolvers of 75%, i.e. they must hold capital against the facilities as if they were 75% drawn, even though large corporate revolvers are seldom drawn. Banks that qualify to use the IRB approach may benefit from a lower CCF, but they must show data for drawings over a full economic cycle and apply a measure of conservatism to their assumptions.

### Exhibit 4: Example-- Barclays 2019 RWAs and Capital

Barclays RWAs, 2019 Capital 300 300 Operational Risk, £41.0bn 250 250 Market Risk, £30.8bn Counterparty Credit Risk, £32.1bn 200 200 لم 150 h 150 Tier 2, £11.4bn Additional Tier 1, £11.4bn, 21.6% of RWA 17.7% of RWA 100 100 Credit Risk, £191.3bn 50 50 Common Equity Tier 1, £40.8bn, 13.8% of RWA 0

Source:https://home.barclays/content/dam/home-barclays/documents/investor-relations/ResultAnnouncements/2019FYResults/20200213-Barclays-PLC-Pillar-3-Report.pdf

#### Methodology for Assigning Risk Weights for Credit Risk

Below we summarize the assignment of risk weights for credit risk set forth in the Basel Framework published by the Basel Committee on Banking Supervision, a committee of the Bank for International Settlements (BIS) which is intended to be the global standard setter for the prudential regulation of banks. The actual calculations are implemented in the EU by the Capital Requirements Regulation (CRR), and in the US by the Code of Federal Regulations, Title 12, Chapter 2, Subchapter A, Part 217. As described herein, the full Basel standards, commonly designated as "Basel III" (some market participants refer to the latest standards as "Basel IV"), will go into effect over time, and the US regulations include important differences from the Basel standards.

The bulk of a bank's RWAs are derived from credit risk

<sup>&</sup>lt;sup>1</sup> Applies to risk weight calculations for revolvers / credit facilities only Page | 4

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#### **Standardized Approach**

Banks that do not have regulatory approval to assign risk weights based on their internal credit risk metrics must apply the standardized approach, which assigns risk weights based on broad asset categories, using external credit ratings from rating agencies for some types of assets. Some jurisdictions prohibit the use of external ratings to determine bank capital requirements, so the standardized approach also specifies risk weights for such jurisdictions and for non-externally rated entities. For banks that rely on external ratings of their assets, risk weights for different asset types are set forth in the following table:

	External Rating								
Asset Category	AAA, AA	А	BBB	BB, B	CCC	Unrated			
Sovereigns/Central Banks	0%	20%	50%	100%	150%	100%			
Public Sector Entities	20%	50%	50%	100%	150%	50%			
Banks	20%	30%	50%	100%	150%				
Banks-Short Term (<3 months)	20%	20%	20%	50%	150%				
Corporates (other than SME)	20%	50%	75%	100%	150%	100%			

Loans to small and medium enterprises (SME) are typically not externally rated and attract an 85% risk weight.

For exposures to unrated banks, and in jurisdictions that prohibit reliance on external ratings, bank obligors are classified into one of three risk buckets: A, signifying adequate capacity to meet financial obligations; B, signifying substantial credit risk; or C, signifying material default risk.

	Credit Assessment					
	A	В	С			
Base Risk Weight	40%	75%	150%			
Short term (<3 months)	20%	50%	150%			

For exposure to corporates where there is no external rating or no ability to rely on external rating, the risk weight depends on whether the corporate is investment grade or SME.

	IG	SME	Other
Corporate	65%	85%	100%

Unsecured retail (i.e. consumer) exposures are split between regulatory retail (which have balances less than  $\leq 1$  million and maximum concentration in the portfolio of 0.2%), transactor (which are revolving lines such as credit cards which have repaid in full on all scheduled maturities in the past 12 months), and other.

	Regulatory	<b>Regulatory Retail</b>	
	Retail	Transactor	Other
Unsecured	75%	45%	100%

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Loans backed by residential real estate and income-producing real estate have risk weights assigned based on their loan-to-value ratio (LTV) as the time or origination:

LTV									
	<	<50	50-60	0 60	-80	80-9	90	90-100	>100
Residential Real Estate	2	.0%	25%	6 3	30%	40	%	50%	70%
	i								
				LTV					
			<60	60-80		>80			
Income Producing Real Es	tate		70%	80%		110%			

Risk weight calculation for retained tranches of reg cap deals The standardized approach also specifies the treatment of securitization tranches held by banks, including tranches retained by the issuing bank from reg cap transactions. For securitization exposures that are externally rated and in jurisdictions where external ratings can be used, the capital calculations are based on tranche seniority, maturity, rating and the thickness<sup>2</sup> of the tranche:

			Non senior thin			
	Senior t	ranche	trand	che		
	1 year	5 year	1 year	5 year		
AAA	15%	20%	15%	70%		
AA+	15%	30%	15%	90%		
AA	25%	40%	30%	120%		
AA-	30%	45%	40%	140%		
A+	40%	50%	60%	160%		
А	50%	65%	80%	180%		
A-	60%	70%	120%	210%		
BBB+	75%	90%	170%	260%		
BBB	90%	105%	220%	310%		
BBB-	120%	140%	330%	420%		
BB+	140%	160%	470%	580%		
BB	160%	180%	620%	760%		
BB-	200%	225%	750%	860%		
B+	250%	280%	900%	950%		
В	310%	340%	1050%	1050%		
B-	380%	420%	1130%	1130%		
CCC+/CCC/CCC-	460%	505%	1250%	1250%		
Below CCC-	1250%	1250%	1250%	1250%		

The RWAs for non-senior tranches are calculated as (risk weight from table) times (1 minus the lesser of the tranche thickness or 50%). Risk weights for securitization tranches are floored at 15%. For unrated securitization exposures, and in jurisdictions where external ratings cannot be relied on, the risk weight is calculated based on a formula with inputs including the average risk weight of the

 $<sup>^2</sup>$  The size of the tranche as a percentage of the portfolio securitized Page  $\mid$  6

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assets in the underlying pool, the tranche attachment and detachment points<sup>3</sup>, and the proportion of assets in the underlying pool that are delinquent at the time of securitization. The risk weight floor is also set at 15% under this method.

European banks completing reg cap deals must be judged to achieve "significant risk transfer" (SRT) to obtain capital relief. In November 2020 the European Banking Authority (EBA) provided a set of guidelines to harmonize SRT guidelines across European jurisdictions. The guidelines cover structural features of reg cap transactions including sequential vs pro-rata amortization<sup>4</sup>, call options, synthetic excess spread<sup>5</sup>, and credit events. The guidelines are considered helpful by market participants, but still leave significant uncertainties and ambiguities, including requirements about the quantum of risk that must be transferred. The treatment of synthetic excess spread is also considered punitive and will likely be subject to lobbying efforts.

Securitization positions that fit simple, transparent, and comparable ("STC") criteria under the Basel framework, or similar simple, transparent, and standardized ("STS)" criteria under EU rules are subject to reduced risk weights based on a lower multiplier and a floor of 10% for senior tranches vs. the normal floor of 15%. Under current rules, synthetic securitizations cannot benefit from these lower risk weights, but in May 2020 the EBA recommended that the STS framework be extended to apply to retained tranches of synthetic balance sheet securitizations, which would enable them to achieve the lower risk weights.

#### Internal Ratings-Based (IRB) Approach

Banks can obtain regulatory approval to apply the IRB approach for specific asset portfolios based on specific risk models. The IRB approach is based on measures of expected losses (EL), calculated as probability of default (PD) \* loss given default (LGD) as adjusted for provisions, and unexpected losses. Risk weight for unexpected losses is based on PD, LGD, EAD, and effective maturity (M). In some cases, banks have approval to use their internal estimates only for assigning the PD, and use supervisory values for the other parameters--this is known as the "foundation IRB approach", as opposed to the "advanced IRB approach."

The IRB approach is split into 9 broad asset classes: sovereigns, banks, corporates, specialized lending, corporate purchased receivables, qualifying revolving retail exposures, retail residential mortgages, other retail, and retail purchased receivables.

The BIS provides sample risk weights assuming different assigned PDs for a selection of assets:

- Corporate loan, 2.5 years, expected LGD 40%, €50 mm annual turnover
- Corporate loan, 2.5 years, expected LGD 40%, €5 mm annual turnover (note risk weights are lower for smaller companies to encourage lending to SME)

<sup>5</sup> Synthetic excess spread is a mechanism whereby the originator assumes losses amounting to a percentage of the portfolio per annum before the investor assumes risk
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In spite of efforts to harmonize treatment of reg cap transactions across Europe, anomalies persist, which can create opportunities for investors

The EBA has recommended lower risk weights for retained senior tranches of synthetic reg cap deals

<sup>&</sup>lt;sup>3</sup> Attachment point is the percentage of losses on the portfolio that can occur before the investor assumes risk, detachment point is the percentage of losses on the portfolio above which the investor no longer assumes risk

<sup>&</sup>lt;sup>4</sup> In a sequential amortization deal, when the portfolio amortizes, the senior tranche amortizes first; in a pro-rata deal, amortization on the portfolio is shared proportionally between the senior and junior tranches

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- Residential mortgage, expected LGD (assigned based on LTV and other factors) 45%
- Residential mortgage, expected LGD 25% (lower risk)
- Retail exposure, expected LGD 45%
- Retail exposure, expected LGD 85%
- Qualifying revolving retail exposure (QRRE)<sup>6</sup>, expected LGD 50%
- QRRE, expected LGD 85%

#### Risk weights for these sample assets are as follows<sup>7</sup>:

	Corporate Ex	<posure,< th=""><th colspan="2">Residential</th><th colspan="2"></th><th>Qualif</th><th>ying</th></posure,<>	Residential				Qualif	ying
	2.5 year Ma	aturity	Mortg	ages	Other Retail		Revolvinį	g Retail
LGD	40	40	45	25	45	85	50	85
Turnover (€mm)	50	5						
PD								
0.05%	17.5%	13.7%	6.2%	3.5%	6.6%	12.5%	1.7%	2.9%
0.10%	26.4%	20.7%	10.7%	5.9%	11.2%	21.1%	3.0%	5.1%
0.25%	44.0%	34.7%	21.3%	11.8%	21.2%	40.0%	6.4%	10.9%
0.50%	61.9%	48.8%	35.1%	19.5%	32.4%	61.1%	11.2%	19.0%
1.00%	82.1%	64.4%	56.4%	31.3%	45.8%	86.5%	19.1%	32.5%
1.50%	93.9%	73.0%	73.5%	40.8%	53.4%	100.8%	26.0%	44.2%
2.00%	102.1%	78.7%	87.9%	48.9%	58.0%	109.5%	32.1%	54.6%
3.00%	114.2%	86.7%	112.0%	62.2%	62.8%	118.6%	43.0%	73.0%
4.00%	124.1%	93.4%	131.6%	73.1%	65.0%	122.8%	52.4%	89.1%
5.00%	133.2%	99.8%	148.2%	82.4%	66.4%	125.5%	60.8%	103.4%
10.00%	171.6%	130.2%	204.4%	113.6%	75.5%	142.7%	93.2%	158.5%
20.00%	211.8%	167.5%	253.1%	140.6%	100.3%	189.4%	131.1%	222.9%
e 1						1		

Source: https://www.bis.org/basel\_framework/chapter/CRE/99.htm

For securitizations, including retained tranches of reg cap deals, where the IRB RWAs of the underlying pool can be calculated, RWAs are calculated based on a formula taking as inputs the RWAs of the underlying pool, the number of loans in the underlying pool, the weighted average LGD, the maturity of the tranche, the attachment point, and the detachment point. As for securitizations where risk weight is determined based on the standardized approach, the risk weight floor is 15%, with a 10% floor applying to securitizations meeting STC guidelines.

<sup>6</sup> Unsecured, uncommitted exposure of less than €100,000 to an individual

Correlation = 
$$R = 0.12 \cdot \frac{\left(1 - e^{-50 \cdot PO}\right)}{\left(1 - e^{-50}\right)} + 0.24 \cdot \left(1 - \frac{\left(1 - e^{-50 \cdot PO}\right)}{\left(1 - e^{-50}\right)}\right)$$

Maturity adjustment =  $b = \left[0.11852 - 0.05478 \cdot \ln(PD)\right]^2$ 

$$Capital \ requirement = K = \left[ LGD \cdot N \left[ \frac{G(PD)}{\sqrt{(1-R)}} + \sqrt{\frac{R}{1-R}} \cdot G(0.999) \right] - PD \cdot LGD \right] \cdot \frac{(1 + (M-2.5) \cdot b)}{(1-1.5 \cdot b)}$$

 $RWA = K \cdot 12.5 \cdot EAD$ 

Source: https://www.bis.org/basel\_framework/chapter/CRE/31.htm

The correlation calculation assumption is varied for financial institutions, SME, and high volatility commercial real estate assets, and the formula is varied for retail residential mortgages, qualifying revolving retail exposures, and other retail exposures.

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<sup>&</sup>lt;sup>7</sup> Risk weights are calculating by applying the following formula:

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Overall riskweighted assets are floored based on the standardized approach

Large bank balance sheets include a patchwork of RWA calculation methodologies

US banks face strict capital floors, meaning capital requirements are excessive relative to the risk profile of many assets

US banks can achieve benefit from reg cap deals backed by low-risk assets Under the Basel standards, banks are subject to a floor, known as the output floor, equal to a percentage of total RWAs calculated using the standardized approach, in order to avoid providing too much capital benefit for internal models. The output floor will be implemented at 50% of standardized RWAs starting January 1, 2023 and will increase by 5% each year until it reaches a peak of 72.5% in January 2028. As noted below, this floor is projected to significantly increase capital requirements at many European banks.

Each bank must obtain regulatory approval to apply the IRB approach to each segment of its portfolio, for example UK corporate loans or German retail credit cards, based on specific risk models, so most asset categories on a bank's balance sheet include some standardized assets and some IRB assets. See appendix for a breakdown of credit risk RWAs on Barclays balance sheet. Given the diversity of methodologies for RWA calculations and the complexity of the rules prescribing which methodology can be applied to which assets, it is inevitable that balance sheets of large banks are sprinkled with portfolios of assets for which the risk weight is higher than dictated by the risk profile of the assets. Reg cap transactions backed by such portfolios can offer attractive risk reward profiles.

#### **Differences in US Approach**

US banks are subject to the Collins Amendment to the Dodd Frank Act, which dictates that total RWAs are the higher of those calculated under the standardized approach and the IRB approach. This is similar in concept to, but much more stringent than, the output floor imposed by the Basel rules.

In addition, the standardized approach is implemented differently in the US, where not only is reliance on external ratings prohibited, but assets are treated in a more homogeneous fashion. For instance, first lien residential mortgages are 50% risk weighted if current and "prudently underwritten," and 100% risk weighted otherwise. Exposure to corporate entities is 100% risk weighted. The US approach also assigns a minimum risk weight to securitizations of 20%, making reg cap deals slightly less beneficial for US banks, but this is increasingly outweighed by other factors.

Because asset pools are treated more homogeneously for capital purposes under the US standardized approach, and because US banks cannot benefit from lower capital treatment under the IRB approach, US banks can obtain capital relief by issuing reg cap deals backed by portfolios skewed toward low-risk assets. The lack of nuance in risk weights provides uniquely attractive opportunities for investors.

JP Morgan and Goldman Sachs completed reg cap deals in 2020, successfully testing the US regulatory regime, and we expect significant growth in the US market in the coming years.

#### **Impending Increases in Capital Requirements**

The Basel framework was finalized in January 2019, as the Basel Committee has been adjusting the guidelines with the goal of making the banking system safer following the financial crisis. The framework will be fully implemented as of January 1, 2023 (postponed from January 1, 2022 due to COVID), with select rules subject to phase in. The credit risk RWA calculations summarized above reflect the 2023 rules.

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European banks continue to face significant capital shortfalls vs. requirements coming into force

COVID impact has been partly postponed due to regulatory forbearance, but capital challenges will be magnified

The European Investment Bank crowded out private capital for SME reg cap deals in 2020. They will be less of a factor going forward In a study published in December 2020 based on the capital situation of 99 European banks as at December 31, 2019, the EBA found that the banks would face an increase in required capital of 18.5%, or a total of  $\in$ 52.2 billion, based on the full implementation of Basel III. This figure was lower than the  $\in$ 109.5 billion figure published by the EBA as of June 2018, largely because during the intervening time banks built up capital to meet the higher standards. The most significant driver of increased capital requirements, accounting for more than 1/3 of the increase in required capital, is the output floor. RWAs for credit risk will also increase due to adjustments to the formulas, including removal of specific support factors for SME and infrastructure finance, inclusion under the IRB approach of lower limits on parameters such as PD and LGD ("input floors"), and limitations on use of the LGD parameter for the IRB approach where limited historical defaults have been observed. RWAs for operational risk will also increase as the available approaches to calculate operational RWAs are narrowed. The EBA recommends adjustments to the Basel framework, including retention of the SME support factor, that would lead to a lower increase in required capital, amounting to 13.1% or  $\in$ 33.0 billion.

#### Coronavirus Impact

Banking regulators implemented a variety of relief measures in response to COVID, as they feared that constriction of credit would compound the economic shock. Many relief measures were temporary, such as delayed implementation of standards, including postponement of Basel III for a year, and capital requirements will increase once the relief expires. Temporary measures not directly relating to capital standards include moratoria and government guarantee schemes on certain types of credits. Moratoria have generally been structured to avoid triggering impairment classification, and guarantees lead to credit risk mitigation and reduced RWAs. Many jurisdictions reduced countercyclical buffers, and certain other buffers were temporarily relaxed.

The European Investment Fund (EIF), a subsidiary of the European Investment Bank (EIB), which lends money with the aim of promoting the priorities and objectives of the European Union, has long been an investor in select SME-backed reg cap deals from European banks, providing guarantees on the junior and mezzanine tranches at spreads generally tighter than market clearing levels. The EIF significantly stepped up its activities in 2020 in light of COVID to help maintain the flow of credit to SMEs, participating in an estimated 17 reg cap deals. The EIF is expected to significantly scale back its investments in reg cap deals in 2021, leaving more opportunities for private investors to participate at market levels.

While the initial extreme stress brought on by COVID subsided fairly quickly, concerns remain about increases in NPL and credit downgrades leading to higher RWAs, particularly for banks with substantial exposure to sectors which may suffer from a long-term shift in behavior, and particularly after moratoria and guarantees expire. We expect bank capital pressures to increase significantly in the short to medium term, exacerbated by the expiration of COVID relief measures.

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#### **Conclusion**

Banks are under conflicting pressures to support businesses and the economy, ensure their balance sheets remain secure in a significant economic downturn, and earn profits for shareholders. Bank regulators are continuously updating and revising capital requirements, making them increasingly complex, to balance at least the first two goals. Banks continue to face challenges of low economic growth and low interest rates, depressing their share prices and return on equity. For the many banks whose shares trade below book value, issuance of equity to meet higher capital requirements would be dilutive to existing shareholders. More banks globally are issuing reg cap transactions, which represent the only tool to reduce capital and risk while maintaining profitable lending that supports the economy. It behooves investors in reg cap transactions to understand the intricacies of the bank capital requirements, as certain anomalies can give rise to particularly attractive risk reward profiles.

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#### Appendix: Barclays RWAs by Exposure and by Model

	Standa	ardized App	oroach	IRB Approach		
			RWA			RWA
Type of Exposure	EAD £bn	RWA £bn	Density	EAD £bn	RWA £bn	Density
Central governments or central banks	166,907	92	0.1%	94,163	4,584	4.9%
Regional governments or local authorities	8,665	1,481	17.1%			
Public sector entities	7,318	234	3.2%			
Multilateral development banks	7,904	0	0.0%			
International organisations	750	0	0.0%			
Institutions	5,262	1,619	30.8%	20,058	4,630	23.1%
Corporates	25,127	23,679	94.2%	95,847	51,703	53.9%
Retail	29,439	22,079	75.0%	209,615	49,395	23.6%
Secured by mortgages	9,091	3,552	39.1%			
Exposures in default	1,739	1,932	111.1%			
Items associated with high risks	1,521	2,282	150.0%			
Covered bonds	1,766	184	10.4%			
Securitisation positions	8,673	1,823	21.0%	35,405	4,913	13.9%
Equity positions	998	2,526	253.1%			
Other items	4,234	1,768	41.8%			
Non-credit obligation assets				8,356	12,867	154.0%
Total	279,394	63,251	22.6%	463,444	128,092	27.6%
Total All Approaches	742,838	191,343	25.8%			

The RWA density for assets subject to the standardized approach is lower overall, but this is skewed by a significant proportion of exposures to central governments or central banks having a very low risk weight under the standardized approach.

Seer Capital Management has prepared this memorandum using information gathered from third parties as well as its own independent research, all of which it believes to be accurate as of the date hereof. While this memorandum represents our current thinking, future events could lead to a change in our opinion, and there can be no guarantee that the opinions expressed herein will be borne out by the market or underlying asset performance.