

## WHITEPAPER

# Capital calculations under the revised securitization framework

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### Summary

The Basel Committee on Banking Supervision issued the final Basel III securitization framework in July 2016, incorporating the alternative capital treatment for simple, transparent, and comparable (STC) securitizations. This framework comes into effect in January 2018.

The revised framework simplifies hierarchy in terms of the number of approaches, reduces mechanistic reliance on external ratings, and enhances risk-sensitivity. The framework addresses the capital treatment of securitization (both STC and non-STC), and resecuritization exposures. Synthetic securitizations and asset-backed commercial paper (ABCP) securitizations are out of scope for the STC framework. However, the Basel Committee is still considering how STC criteria for short-term securitizations and ABCP programs are developed and how to incorporate these criteria into the revised securitization framework.

The prescribed hierarchy of approaches in the final standard includes the internal ratings-based approach, which banks can use with supervisory approval, along with sufficient information. Failing that, a bank can use the external ratings-based approach, provided the exposure is rated (or has an inferred rating), and the jurisdiction permits the use of ratings for regulatory purposes. However, a bank that cannot use either of these approaches must use the standardized approach. If a bank is unable to use even the standardized approach, it must assign a risk weight of 1,250% to the exposure.

Moreover, the securitization exposures that comply with the STC criteria requires less regulatory capital, as the prescribed risk weights and risk-weight caps for these exposures are also lower. Because STC exposures carry lower structural risk, such exposures might be devoid of complex securitization structures and risky underlying assets.

Whether an institution can take advantage of the capital relief potentially available for STC exposures depends on the discretion of its respective jurisdiction. Jurisdictions that believe the operational burden of implementing the STC framework exceeds the benefits that can be derived from its implementation retain the option not to implement the STC framework. This framework implies that only institutions in jurisdictions that permit the use of STC framework can benefit from the lower capital requirements. This framework does not seem to be conducive toward promoting a level playing field and can tip the balance for securitization markets in certain regions. However, the actual impact of the framework remains to be seen.

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# 1. Introduction

The Basel Committee on Banking Supervision issued the final securitization framework under Basel III in July 2016. This framework comes into effect in January 2018. The framework includes the revised securitization framework published in December 2014, along with the alternative capital treatment for simple, transparent, and comparable (STC) securitizations. Basel definitions for Simplicity, Transparency, and Comparability are presented in Figure 1.

Figure 1. Definitions of simplicity, transparency, and comparability

Term	Definition
<b>Simplicity</b>	Simplicity refers to the homogeneity of underlying assets with simple characteristics and a transaction structure that is not overly complex.
<b>Transparency</b>	Criteria for transparency provide investors with sufficient information on the underlying assets, the structure of the transaction, and the parties involved in the transaction, promoting a more comprehensive and thorough understanding of the risks involved. The manner in which the information is available might not hinder transparency, but instead supports investors in their assessment.
<b>Comparability</b>	Criteria promoting comparability could assist investors in their understanding of such investments and enable more straightforward comparison across securitization products within an asset class. Importantly, they might appropriately account for differences across jurisdictions.

The revisions to the securitization framework were the result of the global financial crisis of 2007–08, which highlighted weaknesses in the existing Basel framework. The revised framework simplifies hierarchy in terms of the number of approaches, reduces mechanistic reliance on external ratings, and enhances risk-sensitivity, as detailed in Figure 2. The application of the hierarchy no longer depends on the role that the bank plays in the securitization (investor or originator), or on the credit risk approach that the bank applies to the type of underlying exposures. Instead, the revised hierarchy of approaches relies on the information available to the bank and on the type of analysis and estimations that it can perform on a specific transaction.

Figure 2. Key enhancements to revised securitization framework

Weakness	How the weakness has been addressed
<b>Complexity</b>	<ul style="list-style-type: none"> <li>» Basel II framework had multiple approaches, with four ratings-based approaches look-up tables (2 under internal ratings-based and 2 under standardized approach), two internal approaches for non-rated exposures, and several exceptional treatments.</li> <li>» However, the simplified revised hierarchy consists of only three approaches: internal ratings-based, external ratings-based, and standardized approaches.</li> <li>» The application of hierarchy no longer depends on a bank's role in securitization or on its credit risk approach, but on information availability and on the analysis and estimations that a bank can perform.</li> </ul>

Weakness	How the weakness has been addressed
<b>Mechanistic reliance on external ratings</b>	<ul style="list-style-type: none"> <li>» Basel II requires banks to use the external ratings-based approach, unless external or inferred ratings are not available.</li> <li>» Under Basel III, the external ratings-based approach is no longer at the top of the hierarchy and national jurisdictions have the discretion to allow or disallow its use.</li> <li>» Extra risk drivers (maturity and tranche thickness for non-senior approaches) have been incorporated into the external ratings-based approach to reduce reliance on external ratings and improve risk-sensitivity.</li> </ul>
<b>Inadequate risk-sensitivity</b>	<ul style="list-style-type: none"> <li>» The revised framework results in higher capital requirements, commensurate with the risk of securitization exposures. However, low-risk securitizations that meet the STC criteria do get a more favorable capital treatment.</li> <li>» The final standard incorporates increased risk weights for highly rated securitization exposures and reduced risk weights for low-rated senior securitization exposures.</li> <li>» Internal ratings-based approach incorporates tranche maturity as an extra risk driver while the external ratings-based approach incorporates maturity and tranche thickness as extra risk drivers.</li> </ul>

While developing the final standard, the Committee considered the comments received on its three consultative documents, along with the results of the quantitative impact studies conducted during the consultations. With this document, the Committee has finalized the final standard for alternative capital treatment of STC securitizations. Only non-ABCP, traditional securitizations are within the scope of the STC framework. However, the Committee is still considering how STC criteria for short-term securitizations and ABCP conduits/programs should be developed and how to incorporate these criteria into the revised securitization framework.

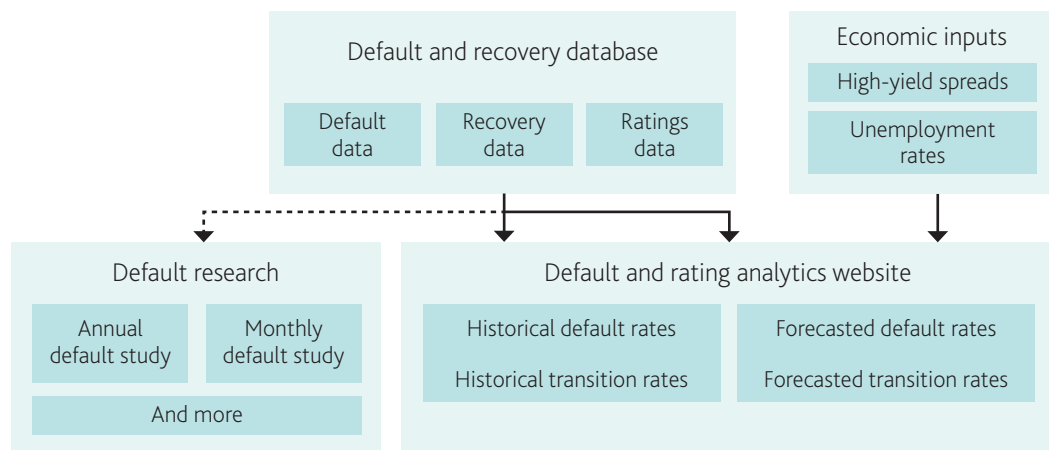
The securitizations that meet the STC criteria are expected to be structurally sound and exhibit lower riskiness. Thus, STC securitization transactions are eligible for a more favorable capital treatment under the Basel capital framework. Therefore, the prescribed risk weights and risk-weight caps for the STC-compliant securitizations are lower and these exposures are expected to lead to lower capital requirements, when compared to the non-STC-compliant securitization exposures. Whether an institution can take advantage of this capital relief depends on the discretion of its respective jurisdiction. Jurisdictions that believe the operational burden of implementing the STC framework exceeds the benefits that can be derived from its implementation retain the option not to implement the STC framework. This framework implies that only institutions in jurisdictions that permit the use of STC framework can benefit from the lower capital requirements. This framework does not seem to be conducive toward promoting a level playing field and can tip the balance for securitization markets in certain regions.

The next sections of this paper describe the hierarchy of approaches in the Basel III securitization framework and explain the calculation of capital requirements using the three prescribed approaches in the hierarchy (for both STC-compliant and non-STC securitizations). It also briefly covers the capital treatment of resecuritization exposures.

## 2. Hierarchy of approaches

Under Basel III, the hierarchy within the securitization framework consists of three approaches: the internal ratings-based approach (IRBA), the external ratings-based approach (ERBA), and the standardized approach (SA). The IRBA is at the top of the hierarchy, as shown in Figure 3. To use IRBA, a bank needs supervisory approval for the type of underlying exposures in the securitization pool, along with sufficient information to estimate  $K_{IRB}$  (which is the exposure-weighted average capital charge for the underlying pool). A bank that cannot use the IRBA can use ERBA, provided the exposure is rated (or has an inferred rating that meets operational requirements) and the jurisdiction permits the use of ratings for regulatory purpose. However, if a bank cannot use IRBA or ERBA, it must use the SA.

Figure 3. Hierarchy of approaches in the revised framework



In general, a bank that cannot use either of these three approaches for a given securitization exposure would assign a risk weight of 1,250% to that exposure. Originator banks can reduce these exposures by the amount of their specific provisions on underlying assets of that transaction and non-refundable purchase price discounts on such underlying assets. In short, securitization exposures are treated differently, depending on the type of underlying exposures and the type of information available to a bank. The securitization exposures of different pools using this hierarchy of approaches have been defined in the following section.

### IRB pool

A securitization pool for which a bank must use IRBA to calculate capital requirements for all underlying exposures, provided there is sufficient information and approval to apply IRBA for that exposure type. If a bank cannot estimate capital requirements using IRBA for all underlying exposures, for which it has a supervisor approval, the bank would be expected to demonstrate to its supervisor why it cannot do so. However, a supervisor might prohibit a bank from treating an IRB pool as such with particular structures or transactions. This approach includes transactions with highly complex loss allocations, tranches whose credit enhancement could be eroded for reasons other than portfolio losses, and tranches of portfolios with high internal correlations. For example, portfolios with high exposure to single sectors or with high geographical concentration.

### SA pool

A securitization pool for which a bank does not have approval to calculate IRB parameters for any underlying exposures, is unable to calculate IRB parameters for any underlying exposures because of a lack of relevant data, or prohibited by its supervisor from treating the pool as an IRB pool. For jurisdictions that permit the use of external ratings, the following approaches can be used:

- » Use ERBA if the exposures have an external credit assessment or an inferred rating that meets the specified operational requirements.<sup>1</sup> An inferred rating can be derived from another eligible rating to another tranche that ranks junior or equal (that is, *pari-passu*).
- » Use Internal Assessment Approach (IAA) for an unrated securitization exposure to an SA pool within an ABCP program (for example, liquidity facilities and credit enhancements). To use an IAA, a bank must have supervisory approval to use the IRB approach.

### Mixed pool

A securitization pool for which a bank can calculate IRB parameters for some, but not all, underlying exposures in a securitization. If a bank cannot calculate  $K_{IRB}$  for at least 95% of underlying exposure amounts of a securitization, the bank is required to use the hierarchy for securitization exposures of SA pools. However, when a bank can calculate  $K_{IRB}$  for at least 95% of the underlying exposures:

- » For the IRBA pool, the capital charge =  $K_{IRB} \times$  % of underlying exposure for which  $K_{IRB}$  can be calculated
- » For the SA pool, the capital charge =  $K_{SA} \times (1 - \text{% of underlying exposure for which } K_{IRB} \text{ can be calculated})$

<sup>1</sup> For operational requirements on ERBA, refer to paragraphs 71 to 73 of the final Basel standard on securitization framework ([link](#))

## 3. Capital requirements calculation: An overview

The capital requirements for securitization exposures are calculated for both STC-compliant and other exposures while the capital treatment for both of these securitization types varies. The risk-weighted asset amount of a securitization exposure is computed by multiplying the exposure amount by the appropriate risk weight, determined in accordance with the hierarchy of approaches. The exposure amount of a securitization exposure is the sum of the on-balance sheet exposure amount, or carrying value, and the off-balance sheet exposure amount<sup>2</sup>, where applicable. Carrying value accounts for purchase discounts and write-downs/specific provisions the bank took on the securitization exposure. The final standard also specifies the treatment of overlapping exposures<sup>3</sup>, along with the caps for securitization exposures (risk-weight caps for senior exposures and overall caps) and alternative capital treatment for STC-compliant exposures.

### 3.1 Caps for non-STC securitization exposures

The Basel Committee has now set the risk weight floor to 15%, reducing it from the 20% floor proposed in the first consultation document. In the current securitization framework, the risk-weight floor is 7% for senior, granular securitization exposures under the IRB and 20% under the SA. Senior securitization exposures receive a maximum risk weight equal to the exposure-weighted average risk weight applicable to the underlying exposures, determined using a look-through approach, provided the bank always knows the composition of the underlying exposures. For banks using the IRB framework, exposure-weighted average risk weight accounts for the scaling factor of 1.06 for the unexpected loss portion, and is inclusive of the expected loss portion multiplied by 12.5. If a bank uses SA or IRBA exclusively, the risk-weight cap for senior exposures would equal the exposure-weighted average risk weight applicable to the underlying exposures under IRBA or SA. When applying SA or ERBA with mixed pools, the risk-weight cap for senior exposures would be based on the SA exposure-weighted average risk weight of the underlying assets, whether they are originally IRB, or not. Where the risk-weight cap results in a lower risk weight than the floor risk weight of 15%, the risk weight resulting from the cap is used.

Similarly, the maximum capital requirement for the securitization exposures a bank holds is equal to the SA or IRBA capital requirement (corresponding to the underlying pool being SA or IRBA) against the underlying exposures, had they not been securitized and treated under the Basel II general credit risk framework. For banks using the IRBA framework, the capital requirement account for the scaling factor of 1.06 for the unexpected loss portion is inclusive of the expected loss portion multiplied by 12.5. In applying the capital charge cap, the entire amount of any gain on sale and credit-enhancing interest-only strips arising from the securitization transaction is deducted.

### 3.2 Criteria of simplicity, transparency, and comparability

The most recent July 2016 update of the securitization standard specifies alternative capital treatment for securitizations that meet the STC criteria. STC securitizations qualifying for this differentiated regulatory capital treatment meet both the BCBS-IOSCO July 2015 STC criteria and the additional criteria for capital purposes (D15 and D16)<sup>4</sup>. The expanded set of criteria is referred to as the STC criteria for regulatory capital purposes and it includes the following new criteria:

<sup>2</sup> For information on measuring off-balance sheet securitization exposure, refer to paragraph 20 of the final standard on securitization framework ([link](#))

<sup>3</sup> For treatment of overlapping exposures, refer to paragraphs 39-41 of the final securitization standard ([link](#))

<sup>4</sup> For STC criteria, refer to A1 to D16 in Annex 2 of the Basel III standard ([link](#))

- » **Criterion D15** specifies that if standardized risk weights for the underlying exposures exceed certain levels then these higher-risk underlying exposures would not be able to qualify for alternative capital treatment as STC-compliant transactions.
- » **Criterion D16** specifies a more explicit definition of granularity, under which no exposure comprises more than 1% of the underlying pool.

Jurisdictions that consider that the cost of implementation of the STC framework exceeds potential benefits retain the option not to implement the STC framework. The final STC criteria cover asset risk and structural risk, along with fiduciary and servicer risk. The criteria incorporate multiple requirements for underlying assets, including terms regarding granularity, homogeneity, transparency, performance history, and risk weights. The criteria related to structural risk include requirements for clear disclosure, underwriting standards, payment and voting rights, limited interest rate and currency exposure, and the presence of risk retention. The STC criteria also accounts for an originator's experience while requiring robust reporting capabilities and guidelines for the servicer. The fulfillment of these criteria helps mitigate uncertainty related to asset risk, structural risk, governance, and operational risk. Therefore, securitizations that qualify as STC-compliant carry a lower capital charge.

The final standard requires that originators or sponsors must disclose to investors all necessary information to allow investors to determine whether a securitization is STC-compliant. Investors then must consider this information to make their own assessment of the securitization's STC compliance status, before applying the specified alternative capital treatment. Although originators would be liable if there are misrepresentations or inaccurate information, the investors and holders of securitization positions are expected to track whether a new development changes the STC compliance status of a securitization. If a supervisor is unsatisfied with a bank's determination that a given transaction satisfies the STC criteria, it can take remedial action. One such action could be the denial of preferential regulatory capital treatment to that transaction and potentially others as well.



## 4. Capital treatment of securitization exposures

The Basel framework requires banks to hold regulatory capital for securitization exposures. These include exposures arising from the provision of credit risk mitigants to a securitization transaction, investments in asset-backed securities, retention of a subordinated tranche, and extension of a liquidity facility or credit enhancement. Banks can calculate these capital requirements using the hierarchy of approaches specified in the Basel III securitization framework. Also, the most recent July 2016 update of the Basel Committee securitization standard specifies alternative capital treatment for securitizations that meet the STC criteria. Under all three approaches in the hierarchy, the risk weight for STC-complaint securitizations is subject to a floor of 10% for senior tranches and 15% for non-senior tranches. Overall, the final calibration using the weighted-average SA capital charge for the underlying exposures in the pool is intended to produce capital requirements that are slightly higher than exposures generated by the IRBA and roughly comparable to exposures generated under the ERBA.

### 4.1 Internal ratings-based approach

In the IRBA, as under the current supervisory formula approach (SFA), the capital requirement depends on the credit enhancement level and tranche thickness, along with the calculation of KIRB. In addition, the capital charge would be based on certain inputs that determine the “p” parameter.

#### Inputs required

To calculate capital requirements for a securitization exposure to an IRB pool, a bank must use the IRBA, along with several inputs that follow:

- »  $K_{IRB}$  is the exposure-weighted average capital charge of the underlying pool. The capital charge incorporates both the expected loss portion and, where applicable, dilution risk<sup>5</sup>. The charge is calculated in accordance with the applicable minimum IRB standards of the Basel framework, assuming the underlying exposures in the pool were held directly by the bank. It reflects the effects of any credit risk mitigant that is applied on the underlying exposures (either individually or to the entire pool). For structures involving an SPE, all the SPE's exposures related to the securitization are treated as exposures in the pool, unless the bank can demonstrate to its national supervisor that the risk of the SPE's exposures is immaterial or that it does not affect the bank's securitization exposure. Any specific provision and non-refundable purchase price discount are not considered in the KIRB calculation, instead these calculations should be based on the gross amounts of the exposures.
- » **Tranche attachment point (A)** represents the threshold at which credit losses within the underlying pool would first be allocated to the exposure. It equals the greater of zero and the ratio of:
  - The outstanding balance of all underlying assets in the securitization, minus the outstanding balance of all tranches that rank senior or equal (*pari passu*) to the tranche that contains the securitization exposure of the bank (including the exposure itself), to
  - The outstanding balance of all underlying assets in the securitization

<sup>5</sup> Dilution refers to the possibility that the receivable amount is reduced through cash or non-cash credit to the receivable's obligor. Dilution risk in a securitization must be recognized if it is not immaterial. Refer to paragraph 369 from Basel II framework for additional context ([link](#))

- » **Tranche detachment point (D)** represents the threshold at which credit losses of principal allocated to a securitization exposure result in a total loss of principal for the tranche. D equals the greater of zero and the ratio of:
  - The outstanding balance of all underlying assets in the securitization minus the outstanding balance of all tranches that rank senior to the tranche that contains the securitization exposure of the bank, to
  - The outstanding balance of all underlying assets in the securitization

For calculation of A and D, over-collateralization and funded reserve accounts are recognized as tranches and the assets forming reserve accounts acts as their underlying assets (unfunded reserve accounts not included).

- » **Supervisory parameter (p)** determines the overall level of capital required for the portion of tranches that reside above securitization exposures that absorb losses up to the amount of capital that would be required if the underlying exposures are held directly by the bank. If the underlying IRB pool consists of both retail and wholesale exposures, a separate p-parameter is calculated for each pool and the p-parameters are weighted by the nominal size of the exposures in each subpool to calculate a weighted average p-parameter.

Non-STC securitizations: 
$$p = \max \left[ 0.3; \left( A + B * \left( \frac{1}{N} \right) + C * K_{IRB} + D * LGD + E * M_T \right) \right]$$

STC-compliant securitizations: 
$$p = \max \left[ 0.3; \left( A + B * \left( \frac{1}{N} \right) + C * K_{IRB} + D * LGD + E * M_T \right) * 0.5 \right]$$

- 0.3 is the p-parameter floor
- N is the effective number of loans in the underlying pool, calculated as shown in Appendix A
- $K_{IRB}$  is the capital charge of the underlying pool
- LGD is the exposure-weighted average loss-given-default of the underlying pool, calculated as shown in Appendix A
- MT is the remaining effective maturity of the tranche, calculated as shown in Appendix A
- Parameters A, B, C, D, and E are determined according to the look-up table in Figure 4:

Figure 4. Look-up values for parameters A, B, C, D, and E

Term	Definition	A	B	C	D	E
Wholesale	Senior, granular (N ≥ 25)	0.00	3.56	-1.85	0.55	0.07
	Senior, non-granular (N < 25)	0.11	2.61	-2.91	0.68	0.07
	Non-senior, granular (N ≥ 25)	0.16	2.87	-1.03	0.21	0.07
	Non-senior, non-granular (N < 25)	0.22	2.35	-2.46	0.48	0.07
Retail	Senior	0.00	0.00	-7.48	0.71	0.24
	Non-senior	0.00	0.00	-5.78	0.55	0.27

If the portfolio share associated with the largest exposure is no more than 3% of the underlying pool, banks can employ a simplified method for calculating N and LGD. Refer to Appendix A for details.

**Calculation of risk weight.** For calculating capital requirements per unit of securitization exposure:

$$K_{SSFA(K_{IRB})} = (e^{a \cdot u} - e^{a \cdot l}) / (a(u - l)) \text{ where}$$

$$a = -(1 / (p * K_{IRB})), u = D - K_{IRB}, l = \max(A - K_{IRB}; 0), \text{ and } e = 2.71828 \text{ (base of natural logarithms)}$$

Next, the risk weight assigned to a securitization exposure (subject to a floor of 15%) will be calculated as follows:

$$\text{Risk weight} = \begin{cases} 1,250\% \text{ [when } D \leq K_{IRB} \text{]} \\ \left[ \left( \frac{K_{IRB} - A}{D - A} \right) * 12.5 \right] + \left[ \left( \frac{D - K_{IRB}}{D - A} \right) * 12.5 * K_{SSFA(K_{IRB})} \right] \text{ [when } A < K_{IRB} \text{ and } D > K_{IRB} \text{]} \\ K_{SSFA(K_{IRB})} * 12.5 \text{ [when } A \geq K_{IRB} \text{]} \end{cases}$$

## 4.2 External ratings-based approach

Under the ERBA, the risk-weighted assets are determined by multiplying securitization exposure amounts by the appropriate risk weights. Also, the operational criteria<sup>6</sup> for use of external credit assessments or for inferred ratings must also be met. For exposures with short-term ratings, or when inferred ratings based on short-term ratings are available, the prescribed risk weights apply. For exposures with long-term ratings, or when inferred ratings based on long-term ratings are available, the risk weights depend on:

- » External rating grade or available inferred rating
- » Seniority of the position
- » Tranche maturity
- » Tranche thickness, in the case of non-senior tranches

The final standard adopts a simplified approach requiring the risk weights to be directly looked up from a table, depending on rating seniority and maturity. Different risk weights have been prescribed for both, securitizations that are non-STC and that are STC-compliant (refer to Figure 6 to Figure 8 in Appendix B). However, the final standard has reduced the risk weights for longer-maturity tranches. The credit rating threshold at which a 1,250% risk weight is automatically required has also been revised from below “BB-“ or below investment grade (that is, “BBB-“) to below “CCC-“, particularly for senior tranches, where the risk weights would increase more gradually than under the current standards. Furthermore, no granularity adjustments are applied, as the Committee believes that the credit rating agencies already account for granularity when assigning a rating to a tranche. The risk weights must be adjusted for tranche maturity and, in the case of non-senior tranches, thickness, as the empirical analysis reflects that the effects of the risk weights are not fully reflected in the ratings:

- » **Adjustment for tranche maturity.** Tranche maturity (MT) is the tranche's remaining effective maturity in years. MT has a floor of one year and a cap of five years and risk weights are linearly interpolated for maturities between one and five years. Refer to Appendix A for method of calculating MT.
- » **Adjustment of non-senior tranches for tranche thickness.** The calculated risk weight is subject to a floor of 15% and will not be lower than the risk weight corresponding to a senior tranche of the same securitization with the same rating and maturity.

**Risk weight = [Risk weight from table after adjusting for maturity] \* [1 – min(T; 50%)]** where,

Tranche thickness, T = D – A

The requirement for having at least two eligible ratings is no longer applicable. Also, a bank might use the Internal Assessment Approach, or IAA, for capitalizing the securitization exposures that it extends to ABCP programs (for example, liquidity facilities and credit enhancements), if the bank has the supervisory approval

<sup>6</sup> For operational requirements for ERBA, refer to paragraphs 71 to 73 of the Basel standard on securitization framework ([link](#))

to use its internal assessments and it meets the required operational requirements<sup>7</sup>. Internal assessments of exposures provided to ABCP programs are mapped to equivalent external ratings of an External Credit Assessment Institution (ECAI). Then, these rating equivalents are used to determine the appropriate risk weights under the ERBA for the exposures.

### 4.3 Standardized approach

To calculate capital requirements for a non-STC securitization exposure to an SA pool using the standardized approach, a bank would use a supervisory formula and the following bank-supplied inputs:

- »  $K_{SA}$ : The weighted-average capital charge of the entire portfolio of underlying exposures. A provision or a non-refundable purchase price discount on an exposure in the pool must be excluded from the  $K_{SA}$  calculation.
- »  $W$ : The ratio of delinquent underlying exposures to total underlying exposures in the securitization pool. Delinquent underlying exposures are underlying exposures that are 90 days or more past due.
- » The tranche attachment point  $A$  and the tranche detachment point  $D$  ( $A$  and  $D$  were defined in Section 4.1 on IRBA). If the only difference between exposures to a transaction is related to maturity,  $A$  and  $D$  will be the same.

#### Calculation of risk weight

The supervisory parameter  $p$  in the context of SA equals 1 (or 0.5 for STC-compliant securitizations) for a securitization exposure that is not a resecuritization exposure. Capital requirements per unit of securitization exposure:

$$K_{SSFA(K_A)} = (e^{a \cdot u} - e^{a \cdot l}) / (a(u - l)) \text{ where } a = -\left(\frac{1}{(p \cdot K_A)}\right) \quad u = D - K_A \quad l = \max(A - K_A; 0)$$

$$K_A = \begin{cases} (1 - W) \cdot K_{SA} + W \cdot 0.5 & \text{[when delinquency status known for all underlying]} \\ \left(\frac{EAD_{W \text{ known}}}{EAD_{\text{Total}}} \cdot K_A (W \text{ known})\right) + \frac{EAD_{W \text{ unknown}}}{EAD_{\text{Total}}} & \text{[when delinquency status unknown } \leq 5\% \text{ of all underlying]} \end{cases}$$

If a bank does not know the delinquency status for up to 5% of underlying exposures in the pool, SA may still be used to calculate the capital requirements for each unit of securitization exposure by adjusting the  $K_A$  calculation (as mentioned in the preceding formula). However, if a bank does not know the delinquency status for more than 5%, the securitization exposure must be risk-weighted at 1,250%. Risk weight assigned to a securitization exposure (subject to a floor of 15%) is calculated as follows:

$$\text{Risk weight} = \begin{cases} 1,250\% & \text{[when } D \leq K_A \text{ or delinquency status unknown } > 5\% \text{ of all underlying]} \\ \left[\left(\frac{K_A - A}{D - A}\right) \cdot 12.5\right] + \left[\left(\frac{D - K_A}{D - A}\right) \cdot 12.5 \cdot K_{SSFA(K_A)}\right] & \text{[when } A < K_A \text{ and } D > K_A] \\ K_{SSFA(K_A)} \cdot 12.5 & \text{[when } A \geq K_A] \end{cases}$$

When a bank applies SA to an unrated junior exposure in a transaction where the more senior tranches are rated and therefore no rating can be inferred for the junior exposure, the resulting risk weight under SA for the junior unrated exposure must not be lower than the risk weight for the next, more senior rated exposure.

<sup>7</sup> For operational requirements on IAA, refer to paragraph 75 of the final Basel standard on securitization framework ([link](#))

## 5. Capital treatment of resecuritization exposures

Other than a 1,250% risk weight, a version of the standardized approach is the only approach allowed for resecuritization exposures, with the following adjustments:

- » The capital requirement of the underlying securitization exposures is calculated using the securitization framework
- » Delinquencies (W) are assumed to be zero for any securitization exposure to a tranche in the underlying pool
- » The supervisory parameter "p" is set equal to 1.5, rather than 1.0, as for securitization exposures

Risk weights and capital requirements caps defined for securitizations are not applicable to resecuritization exposures. If the underlying portfolio of a resecuritization consists in a pool of exposures to securitization tranches and to other assets, securitization tranches are separated from the exposures to assets that are not securitizations. Separate  $K_A$  parameters are calculated for each subset and the KA for the portfolio is calculated as the nominal exposure weighted average of the KA for each subset considered. The resulting risk weight is subject to a floor risk weight of 100%.

## 6. Basel III securitization framework: A step forward

Overall, this final Basel III securitization framework is intended as an improvement to the existing Basel II framework. The Basel III securitization approach hierarchy, covering both securitization (STC and non-STC) and resecuritization exposures, has been simplified and made more risk-sensitive. As per the final risk-weight calibration, SA capital charge for the underlying exposures in the pool is intended to produce capital requirements that are slightly higher than those generated by the IRBA and roughly comparable to those generated under the ERBA. Moreover, the July 2016 update of the final standard specifies alternative capital treatment, with lower risk-weight floors, for STC securitizations.

## Appendix A. Calculation of tranche maturity and loss given default

Below are the methods for calculating parameters such as tranche maturity (for IRBA and ERBA), effective number of exposures (for IRBA), and exposure-weighted LGD (for IRBA).

### Tranche maturity

Tranche maturity  $M_T$  has a floor of one year and a cap of five years and it can be measured as follows, at a bank's discretion:

- » On the basis of weighted-average maturity of the contractual cash flows of the tranche as  $M_T = \sum_t t * CF_t / \sum_t CF_t$  where  $CF_t$  denotes the cash flows (principal, interest payments, and fees) contractually payable<sup>8</sup> by the borrower in period  $t$
- » On the basis of final legal maturity of the tranche, as  $M_T = 1 + (M_L - 1) * 80\%$  where  $M_L$  is the final legal maturity of the tranche

For credit protection instruments that are only exposed to losses that occur up to the maturity of that instrument, a bank would be allowed to apply the contractual maturity of the instrument and would not have to look through to the protected position

### Effective number of exposures (N) and exposure-weighted average LGD

- » If the portfolio share associated with the largest exposure is up to 0.03 or 3% of the underlying pool, banks can employ a simplified method for calculating N and LGD otherwise they will use the regular method. The two methods of calculating N and LGD follow:
  - » Regular method:  $N = (\sum_i EAD_i)^2 / \sum_i EAD_i^2$  and  $LGD = \sum_i LGD_i * EAD_i / \sum_i EAD_i$  where  $EAD_i$  is exposure-at-default associated with the  $i^{th}$  instrument in the pool (multiple exposures to the same obligor must be treated as a single instrument) and  $LGD_i$  is average LGD<sup>9</sup> associated with all exposures to the  $i^{th}$  obligor
  - » Simplified method ( $C_1 < 0.03$ ):  $N = [(C_1 * C_m) + ((C_m - C_1) / (m - 1)) * \max\{1 - m * C_1, 0\}]^{-1}$  and  $LGD = 0.50$  where  $C_m$  is share of the pool corresponding to the sum of the largest "m" exposures (the level of m is set by each bank) and  $C_1$  is portfolio share of the largest exposure.  $N = 1 / C_1$  when only  $C_1$  is available.

<sup>8</sup> The contractual payments must be unconditional and must not be dependent on the actual performance of the securitized assets. If such unconditional contractual payment dates are not available, the final legal maturity shall be used.

<sup>9</sup> When default and dilution risks for purchased receivables are treated in an aggregate manner within a securitization, the LGD input should be constructed as a weighted average of the LGD for default risk and the 100% LGD for dilution risk. The weights are the stand-alone IRB capital charges for default risk and dilution risk, respectively.

## Appendix B. Risk weights for external ratings-based approach

The following tables provide the prescribed ERBA risk weights for short-term and long-term ratings for non-STC and STC securitizations.

Figure 5. ERBA risk weights of short-term ratings for non-STC securitizations

External credit assessment	Risk weight
A-1/P-1	15%
A-2/P-2	50%
A-3/P-3	100%
All other ratings	1,250%

Figure 6. ERBA risk weights of long-term ratings for non-STC securitizations

Rating	Senior tranche		Non-senior (thin) tranche	
	Maturity: 1 year	Maturity: 5 years	Maturity: 1 year	Maturity: 5 years
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%
A	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%
B	310%	340%	1,050%	1,050%
B-	380%	420%	1,130%	1,130%
CCC+/CCC/CCC-	460%	505%	1,250%	1,250%
Below CCC-	1,250%	1,250%	1,250%	1,250%



Figure 7. ERBA risk weights of short-term ratings for STC-compliant securitizations

External credit assessment	Risk weight
A-1/P-1	10%
A-2/P-2	30%
A-3/P-3	60%
All other ratings	1,250%

Figure 8. ERBA risk weights of long-term ratings for STC-compliant securitizations

Rating	Senior tranche		Non-senior (thin) tranche	
	Maturity: 1 year	Maturity: 5 years	Maturity: 1 year	Maturity: 5 years
AAA	10%	10%	15%	40%
AA+	10%	15%	15%	55%
AA	15%	20%	15%	70%
AA-	15%	25%	25%	80%
A+	20%	30%	35%	95%
A	30%	40%	60%	135%
A-	35%	40%	95%	170%
BBB+	45%	55%	150%	225%
BBB	55%	65%	180%	255%
BBB-	70%	85%	270%	345%
BB+	120%	135%	405%	500%
BB	135%	155%	535%	655%
BB-	170%	195%	645%	740%
B+	225%	250%	810%	855%
B	280%	305%	945%	945%
B-	340%	380%	1,015%	1,015%
CCC+/CCC/CCC-	415%	455%	1,250%	1,250%
Below CCC-	1,250%	1,250%	1,250%	1,250%

## References

- Basel Committee on Banking Supervision, July 2016, "Revisions to the securitization framework"—Amended Final Standard ([link](#)).
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