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The Basle Securitisation Framework Explained: The Regulatory Treatment of Asset Securitisation

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The Basle Securitisation Framework Explained: The Regulatory Treatment of Asset Securitisation*

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Abstract:
The paper provides a comprehensive overview of the gradual evolution of the supervisory policy adopted by the Basle Committee for the regulatory treatment of asset securitisation. We carefully highlight the pathology of the new "securitisation framework" to facilitate a general understanding of what constitutes the current state of computing adequate capital requirements for securitised credit exposures. Although we incorporate a simplified sensitivity analysis of the varying levels of capital charges depending on the security design of asset securitisation transactions, we do not engage in a profound analysis of the benefits and drawbacks implicated in the new securitisation framework.

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1 INTRODUCTION

1.1 Loan securitisation and regulatory arbitrage

The broadbrush determination of capital requirements for credit risk exposures in the one-size-fits-all regulatory straightjacket of the 1988 *Basle Capital Accord* has rendered the cost-effective origination of loans (especially investment-grade credits) increasingly difficult and prompted banks to consider large-scale loan securitisation as one way to lower their regulatory cost of capital. Securitisation generally refers to the process of refinancing a diversified pool of illiquid present or future financial and/or non-financial receivables through the issue of structured claims into negotiable capital market paper issued to capital market investors *(liquidity transformation* and *asset diversification process)*.[1] The fairly indiscriminate risk-weighting and a flat regulatory capital charge for on-balance sheet credit risk exposures under the existing regulatory framework of the 1988 *Basle Capital Accord* and later amendments made it less efficient for banks to retain highly rated loans (with low yields relative to required regulatory capital) vis-à-vis risky loans with high net interest income. The main channel through which banks arbitraged these inflexible regulatory provisions was by offering securitised debt on their better quality assets, whilst retaining their riskier assets on their own books. Consequently, the market for securitised assets grew dramatically from the early 1990s onwards and attracted a large following with all major investment banks (Jobst, 2003).

1.2 The consultative process of the Basle Committee

Following protracted efforts over recent years to enhance financial market stability, the Basle Committee on Banking Supervision[2] on 11 May 2004 finally reached agreement on new international rules for the capital adequacy of internationally active banks in *International Convergence of Capital Measurement and Capital Standards: a Revised Framework* (June 2004), termed "Basle 2". It provides binding guidance as to establishment of international convergence on revisions to supervisory regulations governing bank capital. The new regulatory provisions link minimum capital requirements closer with the actual riskiness of bank assets in order to redress shortcomings in the old system of the overly simplistic 1988 Basle Accord. The new regulations represent the final outcome of a series of consultations, each of which followed the three

[1] See Moody's Investor Services (2003) for a brief introduction to asset-backed securitisation (ABS).
[2] The *Basle Committee on Banking Supervision* is a steering group of all G10 member countries of the *Bank for International Settlements* (BIS).

proposals for revising the capital adequacy framework in June 1999, January 2001 and April 2003, with associated quantitative impact studies.[3]

Given the rapid growth of securitisation markets around the world, the Basle Committee acknowledged the importance of asset securitisation as an emergent structured finance funding tool for financial intermediaries and adopted a comprehensive regulatory policy for asset securitisation, which was deemed critical to a viable implementation of a revised Basle Accord.[4] As an integral part of the new proposal of the Basle Accord (Basle Committee, 2004b), the Basle Committee was poised to establish the so-called *Securitisation Framework* based on earlier provisions in the *(Third) Consultative Paper to the New Basle Accord* (April 2003) and subsequent *Changes to the Securitisation Framework* (January 2004) in response to new developments in bank-based structured finance and growing sophistication in synthetic forms of asset securitisation. Prior to the *Securitisation Framework*, which will finally come into force in 2006, the Basle Committee had made several proposals and revisions for a consistent regulatory treatment of securitised exposures based on feedback received from banks and supervisory agencies.

The *First Consultative Paper* (see Fig. 1), released by the *Securitisation Group of the Basle Committee* in June 1999, introduced a general securitisation proposal, which was later expanded upon in the *Second Consultative Paper* on securitisation in January 2001. At this stage, the drafting of common regulatory policy focused primarily on the *standardised* treatment of traditional securitisation transactions, where banks were required to assign risk-weights to securitisation exposures based on few observable characteristics, such as an issue rating. However, it also presented an initial distinction of sponsoring and investing banks, revolving asset securitisation, cash advancement and liquidity facilities as well as risk transfer requirements for traditional securitisation.

After consultation with the industry and further analyses, the Basle Committee issued the *First Working Paper on the Treatment of Asset Securitisation* in October 2001 (see Fig. 1), which comprised an in-depth *internal-ratings based* (IRB) treatment of securitisation exposures in addition to the *standardised*, "one size fits all" approach. It also sought to initiate further consultation on a concrete treatment of synthetic securitisation, liquidity facilities and early amortisation features, which culminated in the *Securitisation Framework* (Credit Risk – Securitisation Framework, §IV of the QIS 3 Technical Guidance) before yet another round of consultation talks then commenced to fine-tune the quantitative criteria of higher risk-sensitivity in the determination of minimum capital requirements for issuers and investors of securitisation transactions. The products of this

[3] For a general discourse on the rationale of banking regulation we refer readers to Benston and Kaufman (1996) as well as Besanko and Kanatas (1996).
[4] Failure to do so would have certainly missed the objective of financial stability set out by the Basle Committee.

latest regulatory effort were the *Second Working Paper on the Treatment of Asset Securitisation* of October 2002 and the *(Third) Consultative Paper to the New Basle Accord* of April 2003, which – among many new qualitative aspects of securitisation regulation, such as supervisory review (Pillar 2) and market discipline (Pillar 3) – also proposed a more *ratings-based approach* (RBA) for securitisation transactions in line with the distinction of the *standardised approach* and the *internal ratings-based* (IRB) approach to the computation of general minimum capital requirements.

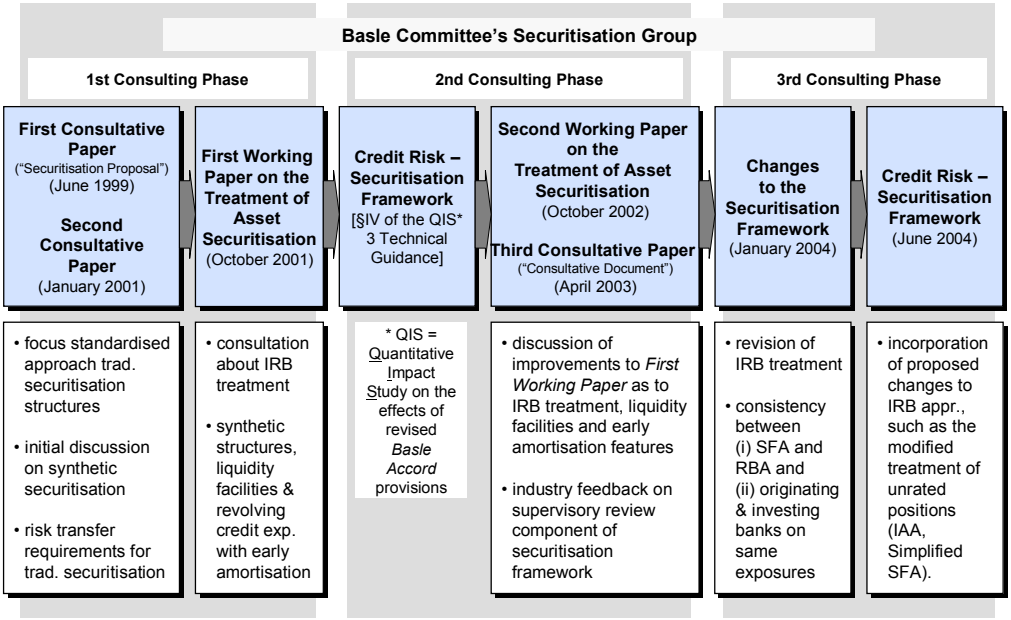

Fig. 1. *The evolution of securitisation framework by the Basle Committee.*

As a decisive step on the way towards a securitisation framework, the Committee issued the *Second Working Paper on the Treatment of Asset Securitisation* on 28 October 2002, a result of a series of consultations to sound out the viability of new, more risk-sensitive elements of a securitisation framework it had already set forth in the *First Working Paper on the Treatment of Asset Securitisation*. The existing regulatory framework according to the 1988 *Basle Accord* then fell short of providing guidance on the comprehensive treatment of synthetic securitisation structures, liquidity facilities, asset-backed commercial paper (ABCP) programmes and securitisation transactions of revolving credit exposures containing early amortisation features. Besides improvements to the *standardised* and the *internal-ratings based* (IRB) treatment as well as the *supervisory formula approach* (SFA) in context of capital adequacy in securitisation, the *Second Working Paper on the Treatment of Asset Securitisation* was mainly put forward in the effort to request input from banking organisations on the need of future modifications to the existing proposal or adjustments to the regulatory treatment of asset securitisation. Notwithstanding its tentative nature as a way to solicit feedback from financial institutions concerning the supervisory review component ("Pillar 2", see Basle

Committee, 2002a and 2002b),[5] the *Second Working Paper on the Treatment of Asset Securitisation* represented a purposeful attempt to address critical gaps in the securitisation framework.

Before the conclusion of the third consultative phase on the regulatory treatment of asset securitisation, the Basle Committee issued its *Changes to the Securitisation Framework* (January 2004) to establish greater consistency of capital charges for (i) securitised exposures and conventional credit risk of the same rating grade and (ii) similar exposures across different regulatory approaches in the bid to reduce the complexity of the *(Third) Consultative Paper to the New Basle Accord* (April 2003). Eventually, after incorporating most of the proposed modifications in *Changes to the Securitisation Framework*, the Basle Committee released the final version of the securitisation framework as part of the new *Basle Accord* of *International Convergence of Capital Measurement and Capital Standards*.

1.3 Objective and structure

The following sections provide a comprehensive overview of the gradual evolution of the *Securitisation Framework* for the treatment of asset securitisation, a culmination of a series of consultative processes completed by the Basle Committee in response to the continued use of loan securitisation for purposes of regulatory arbitrage. We carefully probe the founding components of this new regulatory framework so as to provide accessible understanding of what constitutes a consistent yet still contested regulatory approach to the computation of adequate capital requirements for securitised credit exposures. Although we incorporate a simplified sensitivity analysis of the varying levels of capital charges depending on the configuration of asset securitisation transactions, we do not engage in a profound analytical discourse about the benefits and drawbacks that the new securitisation framework entails.

In the following section, we first explain the contents of the *First Consultative Paper* and the *Second Consultative Paper* of 2001, before moving on to specify the *supervisory formula approach* (SFA) and the *ratings-based approach* (RBA) in their original tenors as stated in the *Second Working Paper on the Treatment of Securitisation* (Basle Committee, 2002a and 2002b), which had been the first account of a consistent regulatory policy for asset securitisation until the adoption of the *(Third) Consultative Paper to the New Basle Accord* (Basle Committee, 2003). Finally, a final exposition of substantial modifications to the regulatory treatment of securitisation under the IRB approach in the new *Basle Accord* of *International Convergence of Capital Measurement and Capital Standards* (Basle Committee, 2004b) outlines the *Changes to the Securitisation Framework* (Basle Committee, 2004a).

[5] See also Basle Committee (2003).

2 THE PATHOLOGY OF THE REGULATORY TREATMENT OF ASSET SECURITISATION – THE SECURITISATION FRAMEWORK

2.1 The new *Basle Accord* and the regulatory treatment of asset securitisation

The revised version of the Basle Accord rests fundamentally on three regulatory pillars. In principle, the first pillar (Pillar 1, "Minimum Capital Requirements") is set for a similar tenor as the 1988 Basle Accord, which requires banks to meet minimum capital requirements for exposures to credit risk, market risk and operational risk. Banks are permitted to use any one of the following approaches to the computation of regulatory capital: the *standard approach*, the *foundation internal ratings-based* (IRB) approach or the *advanced internal ratings-based* (IRB) approach. Although most attention has been devoted to capital adequacy set out in Pillar 1, the two remaining pillars are believed to be of even greater importance (The Economist, 2004). The second pillar (Pillar 2, "Supervisory Review") grants discretion to national supervisory authorities to tweak regulatory capital levels, e.g. they may impose additional capital charges for risk exposures they deem insufficiently covered in Pillar 1. Pillar 2 also includes the requirement for banks to develop internal processes to assess their overall capital adequacy commensurate to their risk profile in compliance with supervisory standards, and to maintain appropriate capital levels. The third pillar (Pillar 3, "Market Discipline") compels banks to disclose more information to financial markets under the objective of strengthening their market discipline and transparent risk management practices (Basle Committee, 2003).

Similar to the on-balance sheet treatment of straightforward credit exposures, the revised Basle Accord also requires banks to hold a certain amount of capital against any securitisation exposure under the *Securitisation Framework for Credit Risk*. It applies to securitisation transactions (synthetic or traditional) involving one or more underlying credit exposures from which stratified positions (or tranches) are created that reflect different degrees of risk. Besides distinguishing between different transaction structures, the securitisation framework not only accounts for the characteristics of securitised assets in terms of both available rating and portfolio characteristics but also for the different roles played by banks in the securitisation process (e.g. originating bank, investing bank and servicing agent/sponsoring bank). Originating banks are of particular interest in this exposition of capital adequacy, mainly because they must satisfy a set of operational criteria depending on the type of transaction structure. Interestingly, these operational criteria for the capital treatment of traditional and synthetic structures are based on the economic substance of the credit risk transfer rather than its legal form. While initial proposals almost exclusively focused on traditional (true sale) securitisation transactions, subsequent amendments also included credit risk transfer exposures arising from synthetic transactions, investments in ABS

securities and retentions of subordinated tranches, as well as liquidity facilities and credit enhancements. The securitisation framework distinguishes only between the so-called *standardised approach* and the *internal ratings-based approach* (IRB) in the way investing and originating banks compute the regulatory capital charge for securitised positions as so-called "risk-weighted assets" by multiplying the notional amount of securitised tranches by a specific risk-weight applied to the standard capital ratio of 8%.

2.2 The *Consultative Package*: The *First Consultative Paper*, the *Second Consultative Paper* and the *First Working Paper on the Treatment of Asset Securitisation*

After the first serious attempts at formulating a regulatory position on the regulatory governance of asset securitisation in the *First Consultative Paper* in June 1999 the Basle Committee issued the *Second Consultative Paper* for the capital requirements of asset securitisation transactions on 16 January 2001, which eventually led to the publication of the *First Working Paper on the Treatment of Asset Securitisation* in October 2001. This revised proposal for an adjustment of regulatory capital and supervision by financial regulators was published as a separate 32-page chapter of a new proposal for the Basle Accord on the *International Convergence of Capital Measurement and Capital Standards* as a comprehensive effort to codify a regulatory framework. Although the First Consultative Paper had already set out definitions of key aspects of securitisation and established minimum operational criteria related to traditional (true sale) structures of credit risk transfer (i.e. where the originator transfers assets usually to an SPV), it remained completely silent on synthetic transactions as a coming structural innovation in asset securitisation. It was not until the *First Working Paper on the Treatment of Asset Securitisation* was published that initial regulatory provisions were revised to include a separate section on synthetic securitisation and operational criteria for the status of banks in securitisation transactions.[6] The subsequent exposition outlines the most prominent aspects raised in the *First Working Paper on the Treatment of Asset Securitisation*.[7]

2.2.1 Definition of true sale transactions by originating banks

The outright transfer of assets off the balance sheet in standard (true sale) transactions represents the most fundamental case of regulatory relief sought by an originating bank. The originating bank is permitted to remove assets from the calculation of risk-based capital ratios only if a "clean break" (or "credit de-linkage") of transferred assets meets regulatory approval. According

[6] Besides the critical issue of information disclosure requirements, the revised proposal also draws an important distinction between implicit/residual risks and explicit risks in securitisation. In this context implicit risk refers to residual risk that is thought of not being legally assumed by an originating or sponsoring bank; however, due to an obligatory commitment to safeguard investors' interests it might still be tacitly recognised to that extent that actions in defiance of an understanding might prejudicially affect the reputation of the originating or sponsoring bank participating in a securitisation transaction.
[7] See Basle Committee (2001), 87ff.

to the *First Working Paper on the Treatment of Asset Securitisation*, regulatory capital relief through true sale transactions applies only if the following operational criteria are satisfied: (i) in compliance with legal provisions governing asset sales, the transferred assets have been legally isolated from the transferor; that is, the assets are put beyond the reach of the transferor and its creditors, even in bankruptcy or receivership; (ii) the transferee is a qualifying special-purpose vehicle (SPV) and the holders of the beneficial interests in that entity have the right to pledge or exchange those interests, and (iii) the transferor does not maintain effective or indirect control over the transferred assets.[8] Unless these conditions hold, the Basle Committee proposes to retain the respective assets on the books of the originating bank for regulatory accounting purposes (RAP), even if the assets have been removed from the books under GAAP standards. These operational criteria were refined later on in the Second Working Paper on the Treatment of Asset Securitisation and the new Securitisation Framework of the agreement on *International Convergence of Capital Measurement and Capital Standards* by the Basle Committee (see section 2.4).

2.2.2 Regulatory capital requirements of originating and investing banks

The regulatory provisions in the *Second Consultative Paper* and the *First Working Paper on the Treatment of Asset Securitisation* also specify minimum capital requirements of securitised exposures held by investing banks (and originating banks, if they retain a fraction of the original transaction volume or a standing commitment/residual claim). For loss of detailed information about the underlying exposures of securitised reference portfolios, investing banks are required to hold regulatory capital for positions of securitisation transactions. In a nod to previous regulatory advances the *Second Consultative Paper* proffers the adoption of ratings-based risk weightings ("ratings-based approach" (RBA)) for rated tranches (see Tab. 1 below) as a regulatory default risk equivalent to their external rating grade.

Rating range		Risk weighting
AAA	AA-	20%
A+	A-	50%
BBB+	BBB-	100%
BB+	BB-	150%
B+	D	capital deduction*
unrated		capital deduction*

** regarded as credit enhancement*

Tab. 1. *Risk-weights according to the revised "Consultative Package" (2001).*

[8] These conditions are essentially the same as in IAS 39/FASB 140/FASB 125, and therefore, there is no new restriction or qualifying condition being put up by the regulators.

In the case of low-risk, *unrated* tranches (e.g. in private placements) or guarantees, the Basle Committee introduced the so-called *look-through approach* for the calculation of the capital charge. Subject to supervisory review this approach requires that the unrated, most senior position of a transaction will receive the average risk-weight that would otherwise be assigned to all securitised credit exposures in underlying portfolio on aggregate, whilst all subsequent, less senior tranches (mezzanine classes but also second loss facilities and other similar structural enhancements) will be accorded a 100% risk-weighting. An originating bank (but also a sponsoring or even an investing bank) might provide a first or second loss position as credit support (credit enhancement).[9,10] For instance, the originating bank commonly retains the most junior, unrated tranche as a first loss piece. Any first loss position would be fully deducted from capital, whilst a second loss facility is considered to be a credit substitute with a 100% risk-weighting after it has been valued at an arm's length basis in line with normal credit approval and review processes. The restrictive use of the *look-through approach* for the most senior positions implies that investing banks (which hold the more senior "investor" positions) are effectively exposed to the aggregate default risk arising from securitised exposures. According paragraph 527 of the *First Consultative Paper* the following conditions would need to be satisfied for the *look through approach* to be applicable:

(i) rights on the underlying assets are held either directly by investors, by an independent trustee[11] on their behalf, or by a mandated representative;

(ii) in the case of a direct claim, the holder of the securities has an undivided *pro rata* ownership interest in the underlying assets, i.e. the underlying assets are subject to

[9] Under the *First Working Paper on the Treatment of Asset Securitisation* the originating bank would need to deduct the notional amount of the first loss position directly from its capital stock. Thus, if a sponsoring bank, for instance, accepts a credit enhancement for first losses in the amount of €5m out for a €100m transaction, a full capital deduction (which implies a risk-weighting of 1250%) reflects the capital loss in case of default. However, any additional loss protection is viewed as a *direct credit substitute* with a 100% risk weighting, provided that a sufficient and significant level of first loss protection is being provided. Hence, a second loss provision of €10m on top of a first loss protection of €5m would incur a further capital charge of €0.8m.

[10] The Basle Committee (2002b) defines credit enhancement as a contractual arrangement [,] in which the bank retains or assumes a securitisation exposure and, in substance, provides some degree of added protection to other parties to the transaction. [...]." According the current regulatory framework, the *optimal structure* of securitisation transactions would avoid a first loss piece altogether, so there would be no specific credit enhancement for the most junior tranche. Consequently, the degree of the credit enhancement needed also proxies for the discrepancy of standardised minimum capital requirements and the issuer's own assessment of adequate risk provision for a certain quality of the reference portfolio to be securitised. However, if the provision of a so-called "first loss piece" cannot be avoided, the issuers follow the objective of setting credit enhancement levels *as low as possible*. Although credit enhancement is commonly derived from *internal* sources, i.e. they may be generated from the assets themselves, it can take a wide range of *external* forms, which includes third-party guarantees, letters of credit from highly-rated banks, reserve funds, first and second loss provisions and cash collateral accounts, which have overtaken letters of credit as the method of choice for major public transactions.

[11] e.g. by having priority perfected security interest in the underlying assets.

proportional rights of investors, whilst the SPV must not have any liabilities unrelated to the transaction;

(iii) in the case of an indirect claim,

a. all liabilities of the trust or special purpose vehicle (or conduit) that issues the securities are related to the issued securities;
b. the underlying assets must be fully performing when securities are issued;
c. the securities are structured such that the cash flow from the underlying assets fully meets the cash flow requirements of the securities without undue reliance on any reinvestment income, i.e. the securitisation transaction perfectly matches the cash flow stream generated from the underlying portfolio; and
d. funds earmarked as pay-out to investors but not yet disbursed do not carry a material reinvestment risk.

Furthermore, the look-through approach requires a risk-weighting of unrated tranches equal to the highest risk-weight assigned to an asset of the reference portfolio. When the *First Consultative Paper* was published, however, the method proposed by the Basle Committee still lacked sufficient clarification of how the capital charge would be determined in this case. At the time, two basic approaches would have lent themselves as suitable means of resolution either: (i) some inferred external rating of an unrated securitisation tranches or (ii) the quantification of both the residual risk held by the originating bank following the securitisation of assets and the amount of credit risk that was actually transferred in the stratified positions of securitised exposures. Soon it became clear that the incentive of originating banks to engage in regulatory arbitrage by shifting high quality assets from their balance sheet would require regulatory action to prevent banks from assuming a higher risk profile at the same regulatory charge. Hence, the Basle Committee gave more credence to a model-based method of deriving risk-weights for unrated tranches.

2.2.3 Regulatory distinction between credit support and liquidity support in securitisation programmes and asset-backed commercial paper (ABCP) conduits

The notion of sponsoring or managing banks includes the administration of securitisation programmes or *asset-backed commercial paper* (ABCP) conduits, where credit exposures from different banks and/or small business creditors are pooled in a securitised reference portfolio. These conduits typically feature an integrated liquidity support mechanism by sponsoring banks (either programme-wide or pool-specific). Such a contractually fixed commitment to lend on the part of the sponsoring or managing bank attracts risk-weightings depending on its maturity. While a short-term agreement to lend is converted with a 0% risk-weighting, any long-term agreement is treated as a direct credit substitute, and, thus, attracts a 100% risk-weighting. Moreover, as one of several special provisions concerning such off-balance sheet exposures, the

First Working Paper on the Treatment of Asset Securitisation addresses mounting concern over the regulatory treatment of liquidity facilities to ABCP as credit enhancement without any clear-cut practical distinction of credit support and liquidity support being put in place. Consequently, the Basle Committee has established a set of essential criteria to conceptually distinguish liquidity support from credit support:

(i) a facility, fixed in time and duration, must provided to the SPV, not to investors, which is subject to usual banking procedures,
(ii) the SPV must have the option at its disposal to seek credit support from elsewhere,
(iii) the terms of the facility must be established on grounds of a clear identification in what circumstances it might be drawn, ruling out the utilisation of the facility either as a provider of credit support, source of permanent revolving funding or as cover for sustained asset losses,
(iv) the facility should include a contractual provision (on the basis of a reasonable asset quality test) either to prevent a drawing from being used to cover deteriorated or defaulted assets or reduce or terminate the facility for a specified decline in asset quality, and
(v) the payment of the fee for the facility should not be further subordinated or subject to a waiver or deferral, while the drawings under the facility should not be subordinated to the interests of the note holders.

If the above-mentioned criteria hold, liquidity support as a contingent commitment for future lending draws a 20% conversion factor. Otherwise, the liquidity facility will qualify as a credit enhancement, which would be treated no different than an investment in a securitisation transaction with a risk-weighting based on either internal or external ratings. So a back-of-the-envelope calculation of a liquidity facility for a partly-supported ABCP conduit of €100m (of which €50m have already been drawn) would require a capital charge of €50m+(€100m-€50m)*20%=€60m.

Moreover, the *First Working Paper on the Treatment of Asset Securitisation* considers the reimbursement of cash advances by the servicing bank in the context of liquidity or credit support granted to an SPV. Nonetheless, it recognises contractual provision for temporary advances to ensure uninterrupted payments to investors only as long as "the payment to any investors from the cash flows stemming from the underlying asset pool and the credit enhancement [are] subordinated to the reimbursement of the cash advance." This qualification ensures seniority of cash advances and requires the servicer of the transaction to withhold a commensurate fraction of the subsequent cash collections to recoup previous cash advances.

2.2.3.1 Revolving asset securitisation

In most revolving asset securitisation transactions, the SPV advances funds to the originating bank in the form of revolving credit in return for the receipt of periodic repayments from a pool of outstanding loans that this refinancing arrangement allows the originator continue to generate.[12] At the same time, the SPV refinances itself by issuing commoditised structured claims as debt securities to capital market investors. These revolving securitisation structures are frequently supplemented by early amortisation triggers, which force an early wind-down of repayment of principal and interest to investors in the event of a significant deterioration of securitised portfolio value due to higher than expected levels of debtor delinquency and/or loan termination. However, in the case of a sudden drop in the cash flow position of the underlying reference portfolio, the originator could be denied a timely withdrawal of revolving credit from the SPV. Early amortisation compels the SPV to use cash flows from securitised loans to pay down investors instead of revolving the amount back to the originator because the originator's claim in appropriating collections in replenishing the collateral portfolio is subordinated to the payment claims of investors.

Although early amortisation functions like credit support to the benefit of investors, the Basle Committee considers such a mechanism potentially hazardous to proper cash flow allocation if early amortisation is triggered in the context of revolving asset securitisation transactions. Hence, if a transaction includes an "amortisation trigger", the *First Working Paper on the Treatment of Asset Securitisation* set forth that the notional amount of the securitised asset pool is to be regarded a credit equivalent and charged with a minimum 10% conversion factor for the off-balance sheet piece of the reference portfolio, which may be increased by national regulatory authorities depending on their assessment of various operational requirements.

2.3 The *Second Working Paper on the Treatment of Asset Securitisation* and the *(Third) Consultative Paper (CP3)*

The *Second Working Paper on the Treatment of Asset Securitisation* (Basle Committee, 2002a and 2002b) refines the preceding consultative process on the treatment of synthetic transactions by providing a more detailed specification of distinctive operational criteria applicable to different types of transaction structures, depending on their economic substance rather than their legal form. An originating bank is exempted from including securitised exposures in the calculation of their minimum regulatory capital requirement for credit risk if the following conditions below hold:

(i) traditional securitisation:

a. the credit risk of associated exposures has been transferred to third parties;
b. no legal and/or economic recourse: the transferor has no direct or indirect control over the transferred assets, i.e. assets are legally isolated from the transferor and beyond the reach of the transferor and its creditors, even in the event of insolvency or receivership (which must be supported by a legal opinion);[13]
c. the transferee is a qualifying special-purpose vehicle (SPV) and the holders of the beneficial interests in that entity have the right to pledge or exchange those interests without restrictions;
d. investors purchasing debt securities issued by the SPV as a means of refinancing the purchasing price of the securitised assets have a claim on the underlying assets but not on the transferor;
e. clean-up calls are permissible if they are (i) not mandatory, (ii) exercised at the discretion of the originating bank and (iii) not designed as credit support;[14] and
f. transaction must not contain clauses that would require the originator to systematically alter (i) the asset quality of the reference portfolio, (ii) the level of credit enhancement and (iii) the nominal investor return after inception of the securitisation transaction.

(ii) synthetic securitisation:

a. originating banks must have sought appropriate legal opinion, which verifies that the contractual obligations arising from the documented credit risk transfer are legally enforceable and binding to all parties involved;
b. significant transfer of credit risk of securitised exposures to third party and protection provider as eligible guarantor;
c. the credit quality of the [credit default swap] counterparty (i.e. the protection provider) and the value of the securitised reference portfolio must not have a material positive correlation;
d. clearly defined redemption criteria: procedures for timely liquidation of collateral in a credit event/default of the counterparty;

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[12] See also Grill and Perczynski (1993) for a more detailed description.
[13] Direct control is defined as any provision that gives rise to economic recourse, such as the possibility to repurchase transferred exposures or the obligation to retain some residual risk in the performance of transferred assets.
[14] The exercise of a clean-up call should be limited to cases when the notional value of assets <10% and the cost of servicing outweighs the benefits from continued repayment.

e. the types of collateral that qualify for synthetic transactions are: cash, certificates of deposit, gold, rated debt securities, certain unrated debt securities, equities[15] and funds; and
f. transaction must not contain clauses that would (i) limit credit protection, (ii) alter the nature of the credit risk transfer or (iii) alter the securitised exposures in a way that would deteriorate the quality of the reference portfolio.

Once a traditional (true sale) or synthetic securitisation meets these requirements, the securitised exposures are subject to a regulatory treatment pursuant to the securitisation framework.[16] Under the securitisation framework, both originating and investing banks are required to provide a regulatory capital charge for the risk-weighted assets of securitised exposures held.[17]

Moreover, in combination with the *(Third) Consultative Paper to the New Basle Accord* (Basle Committee, 2003) *the Second Working Paper on the Treatment of Asset Securitisation* represents the first attempt to expand the *Securitisation Framework* (see Fig. 1) in a revised definition of risk-weightings (RWs) of securitised assets. In particular, the proposition aims to discriminate between rated and unrated securitisation exposures held by originating and investing banks. The regulatory policy put forward by the *(Third) Consultative Paper to the New Basle Accord* distinguishes between two methodologies for the treatment of securitisation transactions in keeping with the general regulatory treatment of credit risk: the *standardised approach* and the *internal ratings-based approach* (IRB), where the latter approach breaks down into the *supervisory formula approach* (SFA) and the *ratings-based approach* (RBA) in an advanced treatment of positions in securitisation transactions.

2.3.1 Standardised approach for securitisation exposures

§526 *(Third) Consultative Paper to the New Basle Accord* (Basle Committee, 2003) explicitly mentions that issuing banks have to choose the same method for the regulatory treatment of securitisation transactions as the one used to determine the capital requirements for the type of underlying

[15] Only equities listed in main indices are eligible for the simple approach of operational criteria that qualify for eligible collateral in synthetic securitisation. The comprehensive approach allows for all equities to be considered.
[16] Note that the securitisation framework does not cover implicit support mechanisms, such as moral recourse.
[17] Generally, in §§521-524 the *(Third) Consultative Paper to the New Basle Accord* stipulates that banks are required to hold regulatory capital against all of their securitisation exposures arising from (i) the provision of *credit risk mitigants* to securitisation transactions, such as investments in asset-backed securities, (ii) the retention of subordinated tranches, and (iii) the extension of liquidity facilities or credit enhancements. In case of capital deduction for securitisation exposures, banks are required to provide appropriate regulatory capital by taking 50% from Tier 1 capital and 50% from Tier 2 capital – except for regulatory provisions of

credit exposures. Hence, for loss of insufficient information about the designated reference portfolio and/or inadequate in-house credit risk management capabilities (in order to calculate the IRB risk-weightings and the regulatory capital requirement K_{IRB}),[18] the use of the *standardised approach* for the credit risk of the underlying exposures of securitised exposures automatically entails the use the standardised approach within the securitisation framework.

		Rating Grades						
		AAA to AA-	A+ to A-	BBB+ to BBB-	BB+ to BB-	B+ to B-	below B-	Unrated
Claims on								
Sovereigns		0%	20%	50%	100%	100%	150%	100%
Banks	*Option 1*	20%	50%	100%	100%	100%	150%	100%
	Option 2	20%	50%	50%	100%	100%	150%	50%
Corporates		20%	50%	100%	100%	150%	150%	100%
Securitisation products *(long-term rating)*		20%	50%	100%	350%	Capital deduction	Capital deduction	Capital deduction

Tab. 2. *Risk-weighting (standardised approach).*

The *standardised approach* does not distinguish between originators and investors in securitisation, while third-party (non bank) investors are treated differently. Analogous to the standardised approach of ordinary credit exposures, the basic procedure for the risk-weighting of individual claims (in the context of securitisation, read *securitised claims* or *tranches*) is determined by the external rating (see Tab. 2). The risk-weights for securitised claims are based on the *long-term rating of the securitisation products* and decrease in a higher rating grade (similar to "regular" claims, categorised by the type of debtor, e.g. sovereigns, banks[19] and corporates). These risk-weights are further distinguished by the type of underlying exposure, i.e. retail portfolios *(individual and SME claims)*, residential property *(residential mortgages)* and commercial real estate *(commercial mortgages)*. Whereas unrated securitisation exposures with an internal rating equivalent to a non-investment grade classification (i.e. below "BBB-") are deducted from capital by issuers (§§529 and 530 *(Third) Consultative Paper to the New Basle Accord*),[20] the *unrated* most senior tranche of a

any expected future margin income, which would need to be deducted from Tier 1 capital (Basle Committee, 2003).

[18] K_{IRB} is the ratio of (a) the IRB capital requirement for the underlying exposures in the securitised pool to (b) the notional or loan equivalent amount of exposures in the pool (e.g. the sum of drawn amounts plus undrawn commitments).

[19] The risk-weights for banks break down into two options: (i) risk-weighting on the country the bank is incorporated *(Option 1)* or (ii) risk-weighting based on the assessment of the individual bank *(Option 2)*. Moreover, claims on banks with an original maturity of three months or less would receive a risk-weighting that is one category more favourable.

[20] Similarly, securitisation exposures in *second loss positions* do not have to be deducted if the first loss position (most junior tranche) provides enough protection (§§529 and 532 *(Third) Consultative Paper to the*

securitisation transaction would be subject to a so-called *look-through treatment*, i.e. the risk-weight is determined by the average risk-weighting of the underlying credits. However, as illustrated in Tab. 2, the capital charges of securitised claims (esp. for non-investment grade tranches) are substantially higher than the charges imposed on corporate and bank credits with the same rating.[21]

2.3.2 Internal ratings-based approach (IRB) for securitisation exposures

The IRB approach extends the *standardised approach* along two dimensions. First, it (i) modifies the *external ratings-based* assignment of *risk-weightings* (RWs) of the *standardised approach* by controlling for tranche size, maturity and granularity of securitisation tranches (*ratings-based approach* (RBA); see Tab. 2)[22] and (ii) introduces the *supervisory formula approach* (SFA) as an *internal-ratings based* (IRB) measure to allow for more regulatory flexibility of issuers (and investors) with sophisticated credit risk management capabilities, which would otherwise not be accounted for in the standardised approach.

Second, according to §567 *(Third) Consultative Paper to the New Basle Accord* (Basle Committee, 2003) the IRB approach departs from an undifferentiated treatment of originators and investors in securitisation markets under the *standardised approach*. A distinction of originating and investing banks requires that (i) investors generally use the *ratings-based approach* (RBA) (except for those approved by national supervisors to use *supervisory formula approach* (SFA) for certain exposures), and (ii) originators use either the *supervisory formula approach* (SFA) or the *ratings-based approach* (RBA), depending on the availability of an external or inferred rating and sufficient information about the securitised exposures (see Tab. 4). *Originating* banks are required to calculate K_{IRB} in all cases and hold capital against held positions (i.e. securitisation claims/tranches) as follows:

(i) *unrated* tranches:
   a. insufficient information to calculate the IRB capital charge from K_{IRB}: full capital deduction;

New Basle Accord). Third-party (non-bank) investors may recognise external ratings up to "BB+" to "BB-" for risk-weighting purposes of securitisation exposures, i.e. capital deduction for securitised claims applies only for rating grades of "B+" and lower.

[21] The *(Third) Consultative Paper to the New Basle Accord* also proposes specific risk-weightings according to the type of underlying exposure: (i) claims included in *regulatory retail portfolios* (75% risk-weighting), i.e. exposures to individuals (e.g. credit card debt, auto loans, personal finance) or SMEs with low *granularity* (e.g. single obligor concentration must not be higher than 0.2% of overall regulatory retail portfolio) and low *individual exposure* (i.e. maximum counterparty exposure not higher than €1 million); (ii) *claims secured by residential property* (35% risk-weighting); and (iii) *claims secured by commercial real estate* (100% risk-weighting).

[22] Hence, both the *standardised approach* and the *internal ratings-based approach* (IRB) allow for qualifying external ratings and various operational criteria (see §525 *(Third) Consultative Paper to the New Basle Accord* (2003)) to be used in the *ratings-based approach* (RBA).

b. sufficient information to calculate the IRB capital charge from K_{IRB}: capital deduction of tranche sizes ("thickness levels") up to K_{IRB}, then application of the *supervisory formula approach* (SFA).
c. The maximum capital requirement is capped at K_{IRB} regardless of the notional amount of unrated tranches.

(ii) *rated* tranches:

a. *inferred* rating: risk-weighting according to the *ratings-based approach* (RBA) based on the rating of the externally rated subordinate tranche, provided that it is longer in maturity;
b. *external* rating[23]: capital deduction of tranche sizes ("thickness levels") up to K_{IRB}, then risk-weighting according to the *ratings-based approach* (RBA).[24]
c. The maximum capital requirement is capped at K_{IRB} regardless of the notional amount of unrated tranches.

Investing banks would need to use the *ratings-based approach* (RBA) if an *external* rating were available or could be *inferred*, irrespective of whether a position held falls below or above the K_{IRB} boundary. Unrated positions must be deducted unless the investing bank receives supervisory approval to calculate the K_{IRB} through SFA like originating banks if the position in question is above the K_{IRB} threshold.

The *supervisory formula approach* (SFA) determines the regulatory requirement for each issued tranche $k \in m$ as "risk-weighted asset", where the (regulatory) *IRB capital charge* for a certain tranche amount (i.e. its exposure at inception) is multiplied by factor 12.5 (which would imply a full capital deduction of the tranche size if the IRB capital charge amounts to a 100% risk-weighting at an 8% capital ratio). The SFA-based regulatory capital requirement is computed on the basis of five essential bank-supplied input variables, reflecting the structured risk of the transaction set forth in *Section III Credit Risk – the Internal Ratings-based Approach* (Basle Committee, 2002a): K_{IRB}, the internal ratings-based (IRB) capital charge that would be applied had the underlying exposures not been securitised (but held directly on the sponsor's balance sheet);[25] the

[23] i.e. public ratings only.
[24] see §§575-577 *(Third) Consultative Paper to the New Basle Accord.*
[25] The Basle Committee defines K_{IRB} as the ratio of (i) the IRB-based capital requirements including the EL portion for the underlying reference portfolio of securitised assets to (ii) the exposure amount of the "exposure amount of the pool (e.g. the sum of drawn amounts related to securitised exposures plus the EAD [exposure-at-default] associated with undrawn commitments related to securitised exposures (Basle Committee, 2002a)." The IRB-based capital requirements have to be calculated in accordance with the IRB approach for credit risk as if the securitised exposures were continued to be held by the originating bank, mainly because it reflects the beneficial effect of any credit risk mitigant applied to the underlying reference portfolio on all of the securitised exposures.

"credit enhancement level" of each tranche (position) L_k; the "thickness" of each tranche T_k; the effective total number N of loans in the securitised loan pool; and the exposure-weighted average loss-given-default (LGD) of the given reference portfolio.[26] The *IRB capital charge* for each tranche k[27] is defined as the amount of securitised exposures C_k multiplied by $\max\left[0.0056 \times T_k, S\left(L_k + T_k\right) - S\left(L_k\right)\right]$, where the *supervisory formula* (SF) is defined by the function $S(.)$, and the *credit enhancement level* L_k gives rise to an intensity-based approximation of the tranche-specific capital charge.[28] This securitisation framework of the *Second Working Paper on the Treatment of Asset Securitisation* was subsequently followed by a period of intense negotiations between national regulatory authorities and banks about the risk sensitivity of proposed measures during the so-called third consultative phase, which resulted in the *(Third) Consultative Paper* in April 2003. For further amendments in response to continued concern by the banking industry eventually established a new securitisation framework within the revised *Basle Accord* on *International Convergence of Capital Measurement and Capital Standards* in 2004.

2.4 Amendments to the *Third Consultative Paper*: *Changes to the Securitisation Framework* and *International Convergence of Capital Measurement and Capital Standards: Credit Risk – Securitisation Framework*

In October 2003 the Basle Committee announced plans to revise the internal ratings-based (IRB) approach within the securitisation framework in response to criticism received by the banking industry, which mainly concentrated on what was considered an unbalanced treatment of senior securitised asset exposures and conventional credit risk of the same rating grade. After the Basle Committee issued a working paper on proposed *Changes to the Securitisation Framework* (Basle Committee, 2004) in the bid to reduce the complexity and the burden of implementing the provisions of the *Second Working Paper on Asset Securitisation* and the *(Third) Consultative Paper* (CP3) on 30 January 2004, it finally published new guidelines on the treatment of asset securitisation as part of the *International Convergence of Capital Measurement and Capital Standards: Credit Risk – Securitisation Framework* in June 2004. Based on the *Changes to the Securitisation Framework* the Committee affirms efforts to (i) install greater internal consistency of risk-weightings applied to similar securitisation exposures, irrespective of the approach used (SFA vs. RBA) and (ii) eliminate differences in the treatment of securitisation exposures held by originators and investors (see Tab. 3).

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[26] See Appendix 1, section 6.1 for the definition of the effective total number of exposures N and the average loss-given-default (LGD).

[27] Note that whenever a bank holds proportional interest in a tranche, the capital charge for this position equals a commensurate proportion of the capital charge of the entire tranche.

[28] See Appendix 2, section 6.2 for the specification of the *supervisory formula* (SF) and the *credit enhancement level L*.

Securitisation exposure		Standard Approach		IRB Approach	
		Originating Bank	*Investing Bank*	*Originating Bank*[1]	*Investing Bank*
Rated[3]	*Investment Grade Rating*	Risk-weight (RW) of long-term ratings: AAA to AA- (20%), A+ to A- (50%), BBB+ to BBB- (100%) Risk-weight (RW) of short-term ratings: A1/P1 (20%), A2/P2 (50%), A3/P3 (100%)		**RBA**	
				Max. capital requirement: K_{IRB}	Max. capital requirement: None
	Non-Investment Grade Rating	All positions: Deduction	Risk-weight (RW) of long-term ratings: BB+ to BB- (350%); all positions rated B+ and lower: Deduction	**RBA**	
				Max. capital requirement: K_{IRB}	Max. capital requirement: None
Unrated[4]		All positions: Deduction		**SFA/ Simplified SFA**[2]	All positions: Deduction
				Max. capital requirement: K_{IRB}	Max. capital requirement: None

1: Investing banks need to seek supervisory approval for inclusion in this category of regulatory capital treatment, whereas originating banks automatically fall into this category. 2: The application of the *Simplified SFA* in lieu of the *SFA* is also subject to supervisory approval. 3: Under the IRB approach the term "rated" refers to positions with an external rating or an inferred rating. 4: The IAA permits originating banks to used RBA for exposures to ABCP conduits, where the internal rating equivalent represents an investment grade/rating.

Tab. 3. *The new securitisation framework (Basle Committee, 2004a and 2004b).*

The major structural change proposed in the revision of the *(Third) Consultative Paper* concerns a refined methodological treatment of unrated and rated positions of investing and originating banks in securitisation transactions for regulatory purposes. For one, the new securitisation framework adopts the proposed *Changes to the Securitisation Framework* (January 2004) concerning the IRB approach by extending the *Ratings-Based Approach* (RBA) to include all rated positions (either rated explicitly or with an inferred rating), regardless of whether the bank is an originator or an investor. This provision also renders irrelevant both the availability of sufficient information for the computation of K_{IRB}[29] and the question of whether positions fall above or below the K_{IRB} threshold as put forth by the *(Third) Consultative Paper* for the application of RBA to rated positions held by originating banks. Moreover, the RBA would also be used in the *Internal Assessment Approach* (IAA) for unrated low-risk positions,[30] e.g. liquidity facilities and credit enhancements banks extend to ABCP conduits. The IAA maps internal risk assessments of such exposures to rating agency criteria for the asset type purchased by the conduit so as to more closely reflect leading banks' current risk management practices.

[29] i.e. the capital charge that would have been applied to the underlying exposures had they not been securitised.

[30] The IAA only applies to exposures with an internal rating equivalent of investment-grade at inception.

	New RBA Risk Weights (CP3 RBA Risk Weights)		
Long-term Rating Grade [Short-term Rating Grade] *(illustrative)*	**Senior tranches**[1] (fomerly: thick tranches, backed by highly granular pools (N>99))	**Base Case**	**Tranches backed by non-granular pools (N<6)**
Aaa/AAA [A-1/P-1]	7	12	20
Aa/AA	8	15	25
A1/A+	10 (20)	18 (20)	35
A2/A [A-2/P-2]	12 (20)	20 (20)	
A3/A-	20 (20)	35 (20)	
Baa1/BBB+	35 (50)	50	
Baa2/BBB [A-3/P-3]	60 (75)	75	
Baa3/BBB-	100		
Ba1/BB+	250		
Ba2/BB	425		
Ba3/BB-	650		
Below Ba3/BB- [all other ratings/unrated]	Deduction		

The "old" RBA risk weights according to the *Second Working Paper on the Treatment of Asset Securitsation* (2002) have been added in parenthesis. Note the change of the qualification criteria for the most preferential risk weights from "highly granular tranches" to "senior tranches". 1: The most preferential risk weights are also assigned to unrated low-risk positions subject to IAA unless a liquidity facility or credit enhancement constituted a mezzanine position in economic substance, which would render applicable the "base case" applicable in this situation.

Tab. 4. *The new long-term and short-term RBA risk-weights (Basle Committee, 2004a and 2004b).*[31]

Changes during the third consultative phase towards a revised securitisation framework also include a closer alignment of the RBA-based risk-weights to the actual riskiness of securitised positions with a high external or inferred rating (as well as low-risk exposures to ABCP, where the IAA applies). The proposed measure moves the focus of assigning the lowest set of risk-weights for investment grade ratings away from the "thickness" (as in the *(Third) Consultative Paper*) to the level of seniority of exposures with little or no loss of risk sensitivity, at the cost of disqualifying some granular tranches from the use of the most preferential risk-weights (see Tab. 4).[32] Separate risk-weights are assigned to (i) senior, granular tranches, (ii) non-senior, granular tranches ("base case") and (iii) tranches backed by non-granular pools. The change of eligibility for the preferential risk-weights is also accompanied by a more fine-tuned differentiation of risk-

[31] The "mark-up" of risk-weights on securitisation tranches can be illustrated by comparing the IRB risk-weights *per se* for an underlying asset class, e.g. residential mortgages and corporate loans, with the risk-weights imposed on securitisation claims. The difference is the greatest especially for low investment grade ratings (e.g. "A", "Baa1" and "Baa2").

[32] Generally, the working paper on *Changes to the Securitisation Framework* defines the term "senior tranche" in context of RBA as a position that is "effectively backed or secured by a first claim on the entire amount of the assets in the underlying securitised pool." Although this definition may only apply to the most senior position within a securitisation transaction, "in some instances there may be some other claim that, in a technical sense, may be more senior in the waterfall (e.g. a swap claim) but will be disregarded for the

weights for different levels of investment grade-rated positions, so as to simplify the RBA framework.

Generally, the regulatory risk-weightings for unrated positions (including liquidity facilities and credit enhancements extended to ABCP conduits, which are not captured by the IAA) in securitisation transactions continue to be based on a modified *Supervisory Formula Approach* (SFA), which, in its initial version, was considered unnecessarily complex (see Appendix 2, section 6.2). However, the new securitisation framework according to the *International Convergence of Capital Measurement and Capital Standards* partially redresses the complexity of the original SFA formula.[33] The *Changes to the Securitisation Framework* before the agreement on the definition of SFA within the framework of the *International Convergence of Capital Measurement and Capital Standards* also set forth the so-called *Simplified Supervisory Formula* ("Simplified SF") as an alternative calculation to the existing *Supervisory Formula* (SF) of the *(Third) Consultative Paper*, easing some the computational burden involved in the old SF.[34] However, the *Simplified SF* did not find entry in the final agreement on a new securitisation framework as subsection to the agreement on *International Convergence of Capital Measurement and Capital Standards* in June 2004.

Additionally, the Basle Committee decided to develop less restrictive operational criteria for the "top-down" IRB approach under the *(Third) Consultative Paper* to calculating K_{IRB}, especially for purchased receivables as securitised exposures. This revision reflects the inability of many banks during the consultative process to decompose expected loss estimates into reliable estimates of default probabilities (PD) and loss-given default (LGD). A flexible regime of deriving the capital charge for these assets (consistent with the IAA) would allow banks to rely on their own LGD estimates.

Overall, the revision of the securitisation framework enhances internal consistency across the standardised and IRB approaches as regards the treatment of both unrated and rated positions. This effort addresses concerns by the banking industry about the need for greater consistency within the securitisation framework in the way capital charges are computed on similar securitisation exposures irrespective of the approach (SFA or RBA) being used. The *Simplified SF* and the IAA represent viable alternatives to the modification of the original SF of the *(Third) Consultative Paper* in order to (i) simplify the complex IRB approach for unrated positions and (ii) reconcile the difference between the two-factor model used to verify the RBA risk-weights and

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purpose of determining which positions are subject to the 'senior tranches' column (Basle Committee, 2004a)."

[33] Note that the final Basle agreement on the *International Convergence of Capital Measurement and Capital Standards* (2004) suggests the elimination of the non-linear solution to the computation of a minimum risk weighting (i.e the "Floor") for a given tranche thickness (see Appendix 3, section 6.3).

[34] See Appendix 4, section 6.4 for the definition of the *Simplified SF*.

the single risk factor model applied in the context of SFA. Moreover, the implementation of the so-called "external rating override" grants originating banks (like investing banks) the privilege to calculate RBA-based risk-weights even if a rated position falls below the K_{IRB} boundary. This expanded use of RBA, irrespective of whether the tranche size meets the K_{IRB} threshold, rewards the use of the IRB approach of securitisation especially for non-investment grade rated tranches, whereas the more fine-tuned treatment of senior tranches (and the associated benefit of preferential risk-weights) helps align capital requirements closer to the actual risk included in low-risk investment grade tranches. This measure attests to the growing importance of external ratings as market signals of the inherent risk of securitisation exposures, which should carry the same regulatory capital charges irrespective of the holders of such positions.[35] Finally, the Basle Committee upholds the original prerequisite of significant credit risk transfer in a securitisation transaction to ensure integrity of the securitisation framework between securitised and non-securitised exposures within the overall revision of the capital requirements of the new Basle Accord.

3 CASE STUDY: THE OPTIMISATION OF REGULATORY CAPITAL

The new Basle Accord on the *International Convergence of Capital Measurement and Capital Standards* ("Basle 2") presents a consistent securitisation framework, which all but eliminates possibilities of regulatory arbitrage through securitisation due to both (i) a more risk-sensitive computation of the capital charge for on-balance sheet credit exposures and (ii) a close alignment of capital requirements of securitised exposures and non-securitised credit exposures. While the mitigation of regulatory capital requirements cannot be deemed the single most important motivation for securitisation, regulatory optimisation has influenced and continues to influence the way issuers devise and advance securitisation techniques to transfer asset exposures to capital markets until the new Basle Accord comes into effect in 2006. If we were to limit our analysis to the regulatory capital charge of *originating banks only*, benefits from securitisation still remain if the issuer incurs different capital charges for non-securitised and securitised exposures of similar credit risk and both operational and processing costs remain low. Let us assume that under the existing Basle Accord a portfolio of on-balance sheet credit exposures would translate into 100% risk-weighted

[35] At the same time, the Basle Committee rejects further decomposition of risk-weights into portions of unexpected loss (UL) and expected loss (EL) in the bid to increase risk sensitivity of the securitisation framework due to the current definition of K_{IRB} as the sum of UL and EL portions of on-balance sheet credit risk exposures. Since the EL tends to be relatively small compared to UL for senior securitisation positions the existing capital requirements are treated as fully representing capital against UL for investment grade-rated positions and unrated positions above K_{IRB}. Conversely, in the case of unrated positions that fall below K_{IRB} or are rated non-investment grade, full deduction of the notional tranche

assets (RWA), which draw a standard capital charge of 8% ("capital ratio") on their notional amount. Hence, any arrangement that yields minimum capital requirement for securitised exposures of less than 8% under simplifying assumptions would attest to regulatory optimisation through asset securitisation.[36] The different degrees of reduced regulatory capital requirements of securitised credit risk exposure can be best illustrated on the basis of the disparate configurations of transaction structures commonly used in loan securitisation.

Transaction type	FLP	Reg. capital calculation	Regulatory capital	Reg. capital with interest sub-part.
Without transaction	-	100% risk weight, 8% capital ratio, no collateral.	**8%**	**N/A**
True sale transaction (92% senior notes, 4% mezzanine notes, 4% FLP)	4%	FLP is fully deductible (100%), which equates to 1250% risk weight at 8% capital ratio	**4%** (0.04x12.5x0.08)	**N/A**
Fully funded indirect synthetic trans. with 98% CDS with OECD bank (FLP 2% see text)	2%	FLP is fully deductible; OECD bank CDS draws 20% risk weighting	**3.568%** (0.02 + 0.98x0.2x0.08)	**1.728%** (1x0.0016 + 0.98x0.2 x0.08)
Same as before with SPV and 0% risk-based capital collateral	2%	FLP is fully deductible; collateralised CDS draws 0% risk weighting	**2%** (1x0.02 + 0.98x0x0.08)	**0.16%** (1x0.0016 + 0.98x0x0.08)
Partially funded indirect synthetic trans. with 98% CDSs with OECD bank (90% super senior swap, 10% junior swap)	2%	FLP is fully deductible; both CDSs with 20% risk weight	**3.568%** (1x0.02 + 0.98x (0.9x0.2+0.1x0.2)x0.08	**1.570%** (1x0.0016 + 0.98x (0.9x0.2+0.1x0.2)x0.08
Same as before but 10% junior swap is collateralised by 0% risk-weighted assets.	2%	FLP is fully deductible; SSS with 20% risk weight and JS with 0% risk weight	**3.411%** (1x0.02 + 0.98x (0.9x0.2+0.1x0) x0.08	**1.413%** (1x0.0016 + 0.98x (0.9x0.2+0.1x0) x0.08
Same as before but both swaps are collateralised by 0% risk-weighted assets.	2%	FLP is fully deductible both swaps with 0% risk weight	**2%** (1x0.02 + 0.98x (0.9x0+0.1x0) x0.08	**0.16%** (1x0.0016 + 0.98x (0.9x0+0.1x0) x0.08

Interest sub-participation of FLP replaces 100% capital deduction of FLP by 8% capital requirement at 100% risk weighting, if interest income is used to compensate FLP holder in the event of default loss. In our example, 0.02x1x0.08=0.0016.

Tab. 4. *Effects of transaction structure on the regulatory capital requirement of securitised credit risk.*

In Tab. 4 we traverse the spectrum of different structures of securitisation transactions – from *conventional* (true sale) to *synthetic* securitisation – to show the capital requirements of an originating bank. Under the most straightforward transaction type of *conventional* true sale securitisation, the asset originator completes an outright asset sale to an SPV, which issues senior and mezzanine debt securities (notes) to capital market investors, where the originator retains a first loss position (FLP) as commitment device to mitigate default risk. In the first transaction type of Tab. 4 (traditional/true sale structure), we assume investor notes to amount to 96% of the transaction volume (with 92% senior notes and 4% mezzanine notes) and an FLP of 4% relative notional

amount appears sufficiently adequate to account for the changing proportions of EL and UL in declining seniority of securitised exposures.

[36] This assumption implies that the revised framework for the risk-sensitive treatment of credit risk exposures under the new agreement of *International Convergence of Capital Measurement and Capital Standards* is

value. After completion of off-balance sheet refinancing through a true sale securitisation, a bank originator would have cut its regulatory capital requirement by half, as it is now required to hold equity of only 4% of the securitised reference portfolio (according to 100% risk weighting of outstanding liabilities from the retention of FLP).

The *fully funded* synthetic equivalent of this form of asset risk transfer (with a SPV) may even further reduce minimum capital requirements. For the same portfolio quality, the associated loss severity[37] in synthetic structures is considered smaller than in true sale transactions due to a more clear definition of default events. With a fully deductible FLP of only 2% and 98% credit risk protection provided by an OECD bank (via a credit default swap (CDS) with 20% risk weighting), the overall capital charge of this *fully funded synthetic* (indirect)[38] transaction would drop to 3.568% $\left(2\%\times 100\% + 98\%\times 20\%\times 8\%\right)$ of the notional amount of the securitisation transaction. If the CDS was to be secured ("collateralised") with 0% risk-weighted assets (e.g. government debt securities), the issuer would need to provide regulatory capital in the amount of FLP at only 2%. The same capital charge applies to the alternative construct of a *partially funded synthetic* transaction, where the credit risk protection is tailored to cover 98% of the notional value of the underlying reference portfolio, with 2% equity retention by the originator. In this case, 90% of the remaining 98% of the portfolio value is hedged with a super senior swap (SSS) and 10% are refinanced by debt securities on the back of a junior swap (JS) agreement, which results in a risk-weighted capital charge of $2\%\times 100\% + 98\%\times\left(90\% + 10\%\right)\times 20\%\times 8\% = 3.568\%$. If the junior CDS was collateralised by 0% risk-weighted assets or supported by a quasi-government agency,[39] the minimum capital requirement would decline to 3.411% $\left(2\%\times 100\% + 98\%\times\left(90\%\times 20\% + 10\%\times 0\%\right)\times 8\%\right)$. If both CDSs were to be collateralised in a similar fashion the capital charge would be merely 2% $\left(2\%\times 100\% + 98\%\times\left(90\% + 10\%\right)0\%\times 8\%\right)$ of the notional value. This straightforward illustration of changes in the computation of regulatory requirements due to different transaction structures has motivated the appellation of securitisation as a regulatory arbitrage tool, which

ignored and any collateral eligible for a risk weight reduction as well as transaction costs of securitisation are disregarded for the purposes of this analysis.

[37] i.e. the aggregate loss of securitised loans after the enforcement of collateral used to secure these loans.

[38] Synthetic transactions come in various structures of security design, which can be specified along three major dimensions: (i) level of funding: unfunded, (fully) funded or partially funded, (ii) involvement of a SPV as issuing agent (indirect or direct securitisation), (iii) degree of collateralisation of funded elements (with or without collateral, e.g. government bonds, guarantees, letter of credit, certificate of indebtedness, *Pfandbriefe*). The classification of *indirect* securitisation refers to the involvement of a SPV as issuing agent. The funding level indicates the degree to which the notional amount of issued debt securities matches up with the volume of the underlying reference portfolio of asset exposures. The term "fully funded" refers to a complete refinancing of securitised exposures by issued debt securities.

[39] e.g. the KfW banking group in Germany or one of the federal/state mortgage corporations in the U.S..

enables issuers to significantly alleviate their regulatory capital burden by means of sophisticated credit risk transfer.

If asset originators and/or issuers should also decide to offer the FLP to capital market investors in a bid to further reduce capital requirements, they would do so by underwriting a so-called *interest sub-participation* agreement as credit enhancement of the FLP as the most junior tranche of the transaction (Böhringer et al., 2001). The interest sub-participation replaces the full capital deduction of FLP at a capital ratio of 8% and 100% risk weighting (see Tab. 4). In the event of default loss, interest sub-participation requires the issuer to compensate any losses absorbed by FLP investors from generated interest income of the reference portfolio after more senior claims to interest and principal have been satisfied. Although junior noteholders of FLP would loose interest payments on defaulted loans, sub-participation guarantees the repayment of principal. For instance, if a securitised reference portfolio was to be hit by a loss given default of 5% and the annual excess interest income would amount to 0.5% of the original portfolio balance on average, investors would be fully reimbursed after 10 years. The effect of incorporating interest sub-participation in securitisation structures is illustrated in the right-most column of Tab. 4. Note that all calculations above merely offer an indication of the regulatory trade-off in securitisation and how regulatory optimisation translates into a lower capital charge. We have ignored any transaction costs incurred in the administration and underwriting of securitisation transactions, be they *explicit* (e.g. legal costs, structuring costs, payments to rating agencies and intermediaries/agents, management fees) or *implicit* (e.g. funding cost after securitisation, reputation effects). Moreover, we have considered the level of FLP to be equal to the minimum capital requirement of securitised credit risk, so that issuers and/or originators would not need to hold capital against securitised debt securities whose level of credit enhancement is smaller than the minimum capital requirement of securitised credit risk.

4 CONCLUSION: THE IMPLICATIONS OF THE CURRENT REGULATORY TREATMENT OF ASSET SECURITISATION

The pathological evolution of the securitisation framework under the revised Basle Accord reflects the successive steps the Basle Committee has taken over time to eliminate arbitrage opportunities from loan securitisation under existing provisions for the regulatory treatment of credit risk under the old 1988 Basle Accord and later amendments. Prior to the recent agreement on new capital standards for credit risk, securitisation techniques remedied the glaring incompatibility between the regulatory capital charge and the actual economic cost of credit risk across the spectrum of varying rating grades (i.e. regulatory "mispricing" of credit risk). In absence of risk-sensitive capital adequacy requirements for credit exposures and with little regulatory guidance as to how banks should compute their capital charge for securitised

exposures, asset securitisation has been labelled a sensible market reaction to inefficient regulatory governance of credit risk in the banking system. So from a regulatory perspective, securitisation is essentially a child of its own making due to anomalies in the regulatory system giving rise to regulatory arbitrage. Needless to say, this use of securitisation aroused concern among regulators about the troubling prospect of (i) an insufficient provision of minimum capital requirements to absorb actual default loss and (ii) an inadequate treatment of unexpected risk. As regards the latter aspect, regulators specifically worried about the absorption of unexpected losses by more senior tranches held by capital market investors in the event of financial shocks, while originators held merely some concentrated risk exposure of expected losses in the form of a junior claim as first loss position.

The new Basle Accord on the *International Convergence of Capital Measurement and Capital Standards* ("Basle 2") restrains regulatory arbitrage through securitisation along two dimensions. On one hand, the capital charge for on-balance sheet credit exposures has been made more risk-sensitive, and, on the other hand, the regulatory treatment of securitisation transactions has been closely aligned to match the capital requirements for non-securitised credit exposures.[40] In anticipation of imminent regulatory change,[41] asset securitisation no longer appears to deserve the now-hackneyed moniker of a pure (regulatory) arbitrage tool, flaunting the gap between internal default provisions for default loss and external risk assessment methods of risk-weighted assets by offering "regulatory overcharged asset holdings/exposures" to capital market investors.

Given the implementation of discriminatory risk-weightings in the revised Basle Accord and a separate regulatory framework for the treatment of asset securitisation, the prospective change of the current regulatory regime censures institutional arbitrage on regulatory capital requirements, which has hitherto motivated the securitisation of investment-grade loans (see section 1.1). Since a higher capital charge levied on risky assets will also carry larger risk-based *capital haircuts*

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[40] Giddy (1997) proffers a new approach to the regulatory treatment of asset securitisation in his definition of "perimeters of bank regulation in securitisation". According to his view, the goal ought to be that the substance and not the form of the asset transfer is what governs capital requirements. Giddy notes in this respect that regulatory authorities may access capital or reserve requirements as if the financing was a secured borrowing in cases when the transfer of assets/asset risk (i) leaves the issuer open to recourse deemed risky by the authorities, and/or (ii) entails the potential for moral hazard, whereby a bank shores up potential or actual losses arising from the securitised exposures in order to protect its name even when not legally required to do so.

[41] The new proposals for the revision of the Basle Accord remedy this shortcoming through the implementation of discriminatory risk-weightings across rating categories. Under this so-called "ratings-based approach" (RBA) risk weights will be more closely aligned to loan grades in the loan book. If the broad-brushed regulatory treatment of loans disappears, banks will increasingly resort to non-investment loan assets to support their securitisation transaction, and by doing so, they will put a premium on the adequate allocation of first loss provision as credit enhancement. Consequently, the incentive to securitise non-investment grade loans adds topical significance to the issue of credit enhancement, as the differences between collateral (reference portfolio) quality and desired structured rating is expected to widen in the future.

contingent on the characteristics of collateralisation, the *incentive for the securitisation of non-investment grade loans* rises. The relationship between the risk level of non-investment grade loans and the associated economic capital cost will determine the extent to which banks and other financial institutions are prepared to substitute high-risk assets (i.e. non-investment grade loans with presumably high capital haircuts) for investment grade-related credit exposures on their loan books – a reversal of the present drainage of low-risk loans off the balance sheet. Hence, loan securitisation, originally devised as a remedy to inflexible regulatory capital charges, will be instrumental in the *efficient management of economic capital* for purposes of adequate asset allocation.

With the arbitrage paradigm of securitisation giving way to an envisaged reconciliation of economic and regulatory incentives, the role of securitisation as an efficient mechanism to optimise overall regulatory capital charge looks distinctly uncertain. This development begs the question of whether the fundamental economic rationale of asset securitisation does exist and, if so, whether it remains viable. However, the new reality of a more *responsive regulatory setting* does not invalidate, but rather strengthens, the argument for risk-adjusted *efficiency gains (of economic capital)* from loan securitisation. In spite of regulatory changes underway, securitisation markets betray no visible signs of change. The unfettered popularity of asset securitisation implies that issuers appropriate economic benefits from converting illiquid assets into tradable debt securities in the effort to economise on a predefined level of acceptable first loss exposure. Securitisation also maintains its economic edge, as it enables banks and non-bank financial institutions to reap rewards from advanced approaches in controlling credit risk and reduce inessential non-interest rate expenses.

Additionally, recent empirical evidence about financial innovation in transaction structures testifies to the pervasive adaptability and systemic flexibility of asset securitisation. Although it has become a routine procedure of structured finance, and informed investors have grown familiar with its structural characteristics, loan securitisation has preserved sufficient flexibility to absorb regulatory change. Hence, loan securitisation in its current state is not a permanent account of efforts to achieve marketability of credit exposures, but an example of structured finance of its age (when regulatory arbitrage was possible), with properties that originally fed on the absence of a fair internal ratings-based determination of loan default risk. The current regulatory reform simply inaugurates another round of innovation in security design of loan securitisation. The advocacy of securitisation on the grounds of economic benefits makes this argument even more compelling and imminent. However, as risk-sensitive bank capital charges eliminate the regulatory capital arbitrage paradigm of securitisation, the security design of asset-backed securities can only be sufficiently accommodating of these regulatory changes if the

arguments for risk management and efficient asset funding as fundamental economic reasons for securitisation hold.

In a nutshell, it is fair to say that the supervisory responsiveness of the Basle Committee to the accretion of structured finance has led to a more risk sensitive securitisation framework of the agreement on *International Convergence of Capital Measurement and Capital Standards*, which has all but eliminated the optimisation of regulatory capital as an incentive of credit risk transfer through securitisation. Nonetheless, with the problem of insensitive regulatory treatment of credit risk exposures curtailed in the wake of the securitisation framework, the regulatory treatment of securitised exposures falls short of satisfying regimented coherence. The persistent discrepancy of the regulatory capital of similar exposures of securitised debt under the standardised and IRB approaches, and the strategic imbalance implied in the discriminatory derivation minimum capital requirements for credit risk and securitised positions of similar risk, remain sources of continued contention and scrupulous analysis. Given the significant cost of synthetic securitisation, the relationship between security design and the economic cost of securitised exposures as well as derivative elements will become more prominent considerations in structured finance transactions and warrant further regulatory progression.

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6 APPENDIX

6.1 Appendix 1: Definition of the effective number of exposures and loss-given default

The effective number of exposures (N) and the exposure-weighted average loss-given-default (LGD) are defined as[42]

$$N = \left(\sum_i EAD_i\right)^2 \Big/ \sum_i EAD_i^2$$

and

$$LGD = \left(\sum_i LGD_i \times EAD_i\right) \Big/ \sum_i EAD_i \ .$$

EAD_i denotes the exposure-at-default of all exposures to the *i*th obligor in keeping with the general concept of a concentration ratio, where the scale of the weighting factor grows at a geometric rate, and LGD_i denotes the average loss-given-default of all exposures to the *i*th obligor.[43] The thickness of exposures (T) is defined as the ratio of (i) the nominal size C_k of tranche *k* to (ii) the notional amount of securitised exposures C in the underlying reference portfolio

$$T_k = C_k \Big/ \sum_{k=1}^{m} C_k \ .$$

6.2 Appendix 2: Definition of the original Supervisory Formula (SF) and the credit enhancement level according to the Second Working Paper on the Treatment of Asset Securitisation and the (Third) Consultative Paper (CP3)

The original "supervisory formula" (SF) $S(.)$ is defined as

$$S\left(L_k\right) = \begin{cases} L_k & \text{if } L_k \le K_{IRB} \\ K_{IRB} + K\left(L_k\right) - K\left(K_{IRB}\right) + \left(d \times K_{IRB}/\omega\right)\left(1 - e^{\omega\left(K_{IRB} - L_k^*\right)/K_{IRB}}\right) & \text{if } K_{IRB} < L_k \le L_k^* \\ K_{IRB} + K\left(L_k^*\right) - K\left(K_{IRB}\right) + \left(d \times K_{IRB}/\omega\right)\left(1 - e^{\omega\left(K_{IRB} - L_k^*\right)/K_{IRB}}\right) & \\ \quad + \left(L_k - L_k^*\right) \times Floor & \text{if } L_k > L_k^* \end{cases}$$

where

$$c = K_{IRB} \Big/ \left(1 - h\right)$$

[42] The Basle Committee also proposed simplified methods for computing N and LGD.

[43] The *Second Working Paper on the Treatment of Asset-Backed Securitisation* also provides a simplified method of computing the effective number of exposures and the exposure-weighted average loss-given-default (Basle Committee, 2002, 36).

$$h = \left(1 - K_{IRB} / LGD\right)^N$$

$$\nu = K_{IRB} \frac{\left(LGD - K_{IRB}\right) + 0.25\left(1 - LGD\right)}{N}$$

$$f = \left(\frac{\left(LGD - {K_{IRB}}^2\right)}{1-h} - c^2 \right) + \frac{\left(1 - K_{IRB}\right) K_{IRB} - \nu}{\left(1-h\right)\tau}$$

$$a = \left\{ \left[\left(1-c\right) c \right] / f - 1 \right\} c$$

$$b = \left\{ \left[\left(1-c\right) c \right] / f - 1 \right\} \times \left(1-c\right)$$

$$d = 1 - \left(1-h\right)\left(1 - Beta\left[K_{IRB}; a, b\right]\right)$$

$$K\left(L_k\right) = \left(1-h\right)\left(\left(1 - Beta\left[L_k; a, b\right]\right) \times L_k + Beta\left[L_k; a+1, b\right] \times c\right)$$

The *credit enhancement level* (L) is measured (in decimal form) as the ratio of (i) the amount of all securitised positions subordinate to tranche k to (ii) the notional amount of all securitised exposures, which could also expressed as[44]

$$L_k = \frac{\sum_{k=1}^{k-1} T_k}{\sum_{k=1}^{m} T_k} \; \forall L_k \in [0,1[\text{ and } \begin{cases} \lim_{\sum_{k=1}^{k-1} T_k \to \infty} L_k = 1 & \text{for } T_k > 0 \\ \lim_{\sum_{k=1}^{k-1} T_k \to 0} L_k = 0 & \text{for } T_k \geq 0. \end{cases}$$

The supervisory-determined parameters are defined as $Floor = 0.0056$ (lowest capital charge under the ratings-based approach (RBA)), τ=1,000 and $\omega = 20$, and L_k^* solves for the non-linear equation[45]

$$Floor = \left(1-h\right)\left[\left(1 - Beta\left[L_k^*; a, b\right]\right) + d \times e^{\frac{\omega\left(K_{IRB} - L_k^*\right)}{K_{IRB}}}\right].$$

6.3 Appendix 3: Definition of the new Supervisory Formula (SF) in the Changes to the Securitisation Framework (2004)

[44] According to the Basle Committee banks will be required to determine the level of credit enhancement prior to any consideration of effects of any tranche-specific credit enhancements, such as third-party guarantees, which might benefit a single tranche only. Further stipulations exclude any gains-on-sale from the computation of the level of credit enhancement, whereas interest rate and currency swaps more junior than tranche k may be only be considered at their current value or be ignored otherwise.

After elimination of the optimal solution L_k^* to the non-linear definition of some required *Floor*, the new *Supervisory Formula* (SF) according to the *International Convergence of Capital Measurement and Capital Standards* would have been defined as:

$$S(L_k) = \begin{cases} L_k & \text{if } L_k \le K_{IRB} \\ K_{IRB} + K(L_k) - K(K_{IRB}) + (d \times K_{IRB}/\omega)\left(1 - e^{\omega(K_{IRB} - L_k)/K_{IRB}}\right) & \text{if } L_k < L_k \end{cases}.$$

6.4 Appendix 4: Definition of the Simplified Supervisory Formula (Simplified SF) in the Changes to the Securitisation Framework (2004)

The *Simplified Supervisory Formula* ("Simplified SF") fundamentally relies on slicing securitisation exposures into infinitesimally thin tranches ("ITTs") and combines the $Risk\ Factor(L_k) = (12.5 \times K_{IRB})/L_k$ as risk-weight for each ITT given K_{IRB} and $Discount\ Factor(L_k, N) = [(1 - L_k)/(1 - K_{IRB})]^{2\sqrt{N}}$, so that the risk-weight for a securitised position (tranche) $[L_k, L_k + T_k]$ can be approximately derived by averaging the risk-weights from the product of the *Risk Factor* and the *Discount Factor* at the boundaries. The *Simplified SF*

$$0.5\left(\frac{12.5 \times K_{IRB}}{L_k}\right)\left(\frac{1 - L_k}{1 - K_{IRB}}\right)^{2\sqrt{N}} + 0.5\left(\frac{12.5 \times K_{IRB}}{L_k + T_k}\right)\left(\frac{1 - L_k - T_k}{1 - K_{IRB}}\right)^{2\sqrt{N}}$$

could further be extended to an infinite *i* number of ITTs by conditioning thickness T_K by factor i/I. Note that this approach eliminates exposure-weighted average LGDs from the computation of the capital charge of unrated positions, so that two pools with the same K_{IRB} cannot potentially yield different capital requirements. Hence, in *Changes to the Securitisation Framework* the Basle Committee proposes subjecting *N* to a cap on its maximum value, mainly because a large effective number *N* of securitised exposures might yield substantially lower capital charges than the modified SFA; yet, this issue remains to be verified as to its material effects on actual transactions.`

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[45] The specification $Beta[L; a, b]$ refers to a cumulative beta distribution function with parameters *a* and *b* evaluated at *L*.

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