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# *Synthetic Securitization as a Bank Capital Optimization Tool and the Impact of International Regulation*

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# 1 Introduction

In his famous work, *An Inquiry into the Nature and Causes of the Wealth of Nations*, Adam Smith wrote that

> *"[i]t is not by augmenting the capital of the country, but by rendering a greater part of that capital active and productive than would otherwise be so, that the most judicious operations of banking can increase the industry of the country".*

Smith here summarizes one of the principal purposes and functions of the financial system, that is providing individuals and businesses with access to credit to enable investment in the so-called "real economy".

Working at UniCredit, in particular in its Credit Portfolio Management team, allowed me to understand how much powerful could synthetic securitization be in improving access to financing for all businesses across Europe.

Indeed, as a result of the global financial crisis, the two main hurdles to access to financing for businesses and individuals have been (i) capital constraints, and (ii) the limits which banks place on various types of exposures under their risk management policies.

Securitisations, and particularly synthetic securitisations, could be an effective tool in overcoming these obstacles in order to revamp lending activity.

This thesis, which aims at illustrating the world of securitisations, especially focusing on synthetic securitisation, by means of an overview of their performance in recent years, their current regulation, and the developing of their regulatory framework, is structured as follows: Chapter 2 presents the current regulation of securitisation transactions. Chapter 3 attempts to clarify the developing of the so called grey literature, which led to the amendments proposed by the European Commission (EC) and by the European Council, to the securitisation regulation. The European Parliament has the last word, but the path seems to be still long. In the end, in Chapter 4, an analysis on the impact of the "Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL amending Regulation (EU) No 575/2013 on prudential requirements for credit institutions and investment firms" issued by the European Commission.

As better detailed below, the main advantage of a synthetic securitisation transaction from an originator's perspective, is the capital relief in terms of lower risk weighted assets of the securitised portfolio with respect to the underlying exposures.

The EC amendment proposal exactly intervene on the capital requirements an originator financial institution has to comply with for the retained tranches of synthetic securitisation transactions, with the objective of enhancing the securitisations market by means of increasing the confidence of investors in this type of structured products.

# 2 What is a Synthetic Securitisation?

In order to understand what a synthetic securitisation is, the best start is an overview of securitisations in general, explaining how they can be classified, listing their main features and, in the end, understanding which advantages they bring to the banking and the financial sectors, as well as to the economy as a whole.

Once highlighted all these elements, it will be easier to begin the analysis on the evolution of the international regulatory framework.

## 2.1 Overview

### 2.1.1 Definitions

Probably, the best way to start giving an overview of this framework is to provide a set of definitions useful to understand the following paragraphs. Most of them refer to the relevant legislation, that is the Capital Requirements Regulation[1].

First of all, **securitisation** *"means a transaction or scheme, whereby the credit risk associated with an exposure or pool of exposures is tranched[2], having both of the following characteristics:*

*(a) payments in the transaction or scheme are dependent upon the performance of the exposure or pool of exposures;*

*(b) the subordination of tranches determines the distribution of losses during the ongoing life of the transaction or scheme"*[3].

[1] Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 (575/2013)

[2] Art. 4(1)(67) Regulation (EU) No 575/2013

Tranche *"means a contractually established segment of the credit risk associated with an exposure or a number of exposures, where a position in the segment entails a risk of credit loss greater than or less than a position of the same amount in each other such segment, without taking account of credit protection provided by third parties directly to the holders of positions in the segment or in other segments".*

[3] Art. 4(1)(61) Regulation (EU) No 575/2013

Further, two broad categories can be identified: the traditional securitisations (also called true-sale securitisations), and the synthetic securitisations.

A **traditional securitisation** is "*a securitisation involving the economic transfer of the exposures being securitised. This shall be accomplished by the transfer of ownership of the securitised exposures from the originator institution to an SSPE*[4] *or through sub-participation by an SSPE. The securities issued do not represent payment obligations of the originator institution*",[5] but, under this structure, payments to the investors depend upon the performance of the specified underlying exposures, as opposed to being derived from an obligation of the entity originating those exposures.

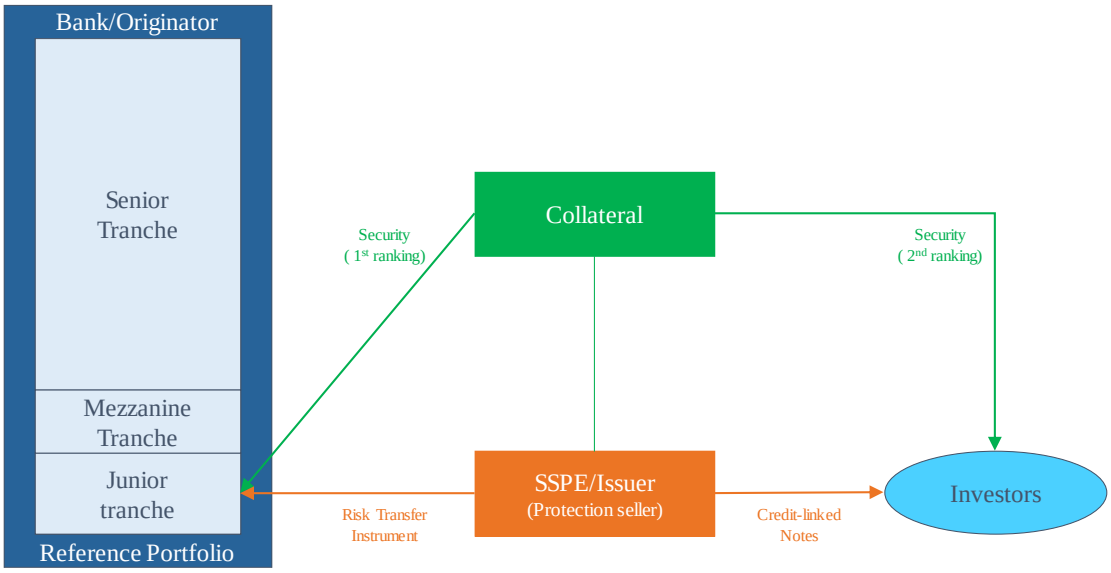


**Figure 2-1: typical synthetic securitisation, making use of a SSPE**

[4] Art. 4(1)(66) Regulation (EU) No 575/2013

"*A securitisation special purpose entity or 'SSPE' is a corporation trust or other entity, other than an institution, organised for carrying out a securitisation or securitisations, the activities of which are limited to those appropriate to accomplishing that objective, the structure of which is intended to isolate the obligations of the SSPE from those of the originator institution, and in which the holders of the beneficial interests have the right to pledge or exchange those interests without restriction.*"

[5] Art. 242(10) Regulation (EU) No 575/2013

Instead, a **synthetic securitisation** is "*a securitisation where the transfer of risk is achieved by the use of credit derivatives or guarantees, and the exposures being securitised remain exposures of the originator institution."*[6]

Synthetic securitisation and traditional securitisation may not fundamentally differ in terms of the nature of the underlying assets, risk tranching and capital structures; effectively, in both cases, the underlying exposures are loans or other debt instruments, and the structure is composed by means of: (i) at least two different stratified risk positions or tranches that reflect different degrees of credit risk, and (ii) a so called "waterfall" capital structure, where the lower tranches are the first bearing losses.

Where they actually differ is the ways of transferring risk from the originator to the investor. While traditional securitisation realises this transfer by transferring the actual underlying exposures and their ownership to a securitisation special purpose entity (SSPE), synthetic securitisation realises the risk transfer by means of a credit protection contract between the originator and the investor, leaving the underlying exposures in the ownership of the originator and on its balance sheet. In synthetic securitisation, consequently, the actual extent of risk transfer does not rely only on the tranching of the transaction, but on the features of the credit protection contract too.

The investor, who serves as a financial guarantor in the case of financial guarantees or as a swap counterparty in the case of credit derivatives, agrees to bear the losses suffered by the owner of the reference assets, up to a pre-agreed maximum amount that is the invested amount, if a credit event[7] occurs in relation to those assets. In return, the originator agrees to pay a premium set on the ground of the perceived probability of credit events occurring on the reference portfolio. Therefore, unlike traditional securitisation, synthetic securitisation does not provide the originator with funding.

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[6] Art. 242(11) Regulation (EU) No 575/2013

[7] The EBA Report on Synthetic Securitisation (EBA/Op/2015/26)
*"Credit events are those events that trigger credit protection payments from the protection seller to the protection buyer within a credit protection contract. The relative 'conservative' nature of the definitions chosen for these events determines the likelihood of them occurring and, consequently, determines the different levels of loss for investors and the different levels of protection for originators."*

Two main types of synthetic securitisations can be identified, namely, balance sheet synthetic transactions and arbitrage synthetic transactions.

In **balance sheet transactions**, the originator credit institution uses financial guarantees or credit derivatives to transfer to third parties the credit risk of exposures which have been originated or otherwise acquired by the bank, and, therefore, which are held on its balance sheet, and against which is required to hold regulatory capital. The third parties to which the credit risk is transferred include hedge funds, pension funds, asset managers, insurance companies and other credit institutions.

In **arbitrage synthetic securitisations**, the bank purchases credit protection on a portfolio of loans or other obligations which it does not actually hold. It is clear that, having the protection buyer little or no existing exposure on the reference portfolio, these transactions are mainly speculative in nature. Actually, the two transactions are very similar on a legal technology point of view; what really differentiate them are the motivations behind.

In the end, **first loss tranche** *"means the most subordinated tranche in a securitisation that is the first tranche to bear losses incurred on the securitised exposures and thereby provides protection to the second loss and, where relevant, higher ranking tranches."*[8]

## *Major Players involved in the Synthetic Securitisation*

Synthetic securitisation transactions involve a large number of actors, among which the most important are:

- The **Originator** (or protection buyer) is the entity which transfers the credit risk of the reference portfolio.
- The **SPV** is an entity different from the originator, which is organised to carry out one or more securitisation transactions and has a structure which cuts off the entity's obligation from the originator ones[9].

[8] Art. 242(15) Regulation (EU) No 575/2013

[9] All entities for the securitisation that satisfy these requirements pursuant to article 3 of Law No. 130 of 30 April 1999

- **Investors** are the counterparties which purchase the notes issued by the SPV (if involved).
- The **Protection Seller** is the party receiving the premium payments, and the subject exposed to the credit risk of the reference entity.
- The **Arranger** is an entity appointed by the originator for structuring and coordinating all the involved parties of the transaction.
- The **Tax and Legal Advisers** are the parties who provide support in the preparation of all the documents of the transaction and, if required, draw up relations and/or opinions.
- The issued securities are assessed and monitored by **Rating Agencies**.
- The **Servicer** is the entity that monitors the portfolio, manages the guarantees and finally produces reports on the transaction addressed to all parties stated in the transaction documents (i.e. trustee, SPV, rating agencies).
- A key role in synthetic transactions is the one of the **Verification Agent**, which usually is a major accounting firm, and, is responsible for verifying various matters, including:
  (i) whether or not the reference exposures comply with the eligibility criteria and the concentration limits at the time they were included in the securitised;
  (ii) whether a credit event has actually occurred and that the losses calculated with respect to this credit event are in accordance with the terms of the credit protection arrangements.

  In order to allow the verification agent for performing this role in the best way, the originator will disclose more information about the securitised exposure than it is required to disclose to investors.
- The **Calculation Agent** is responsible for calculating the amount owed by the parties.
- The **Cash Manager** is involved in managing the SPV's accounts and in drafting reports, it sends payments instructions on the payment date in compliance with the

payment report prepared by the calculation agent, and, in addition it provides liquidity management on SPV's accounts and drafting of the carried investments.

- The **External Auditor** is the actor who is appointed for releasing opinions on the expected recoveries, certification of SPV's balance sheet and providing all the other market practises.
- In the end, the **Joint** or **Sole Lead Manager(s)** is appointed to place CLN or other appropriate hedging instruments.

### 2.1.2 Structuring a Synthetic Securitisation

A synthetic securitisation does not actually require the issue of any "securities". All that it is required is the tranching of the portfolio through the credit protection arrangements and that the performance of each tranche is dependent on the performance of the underlying exposures.

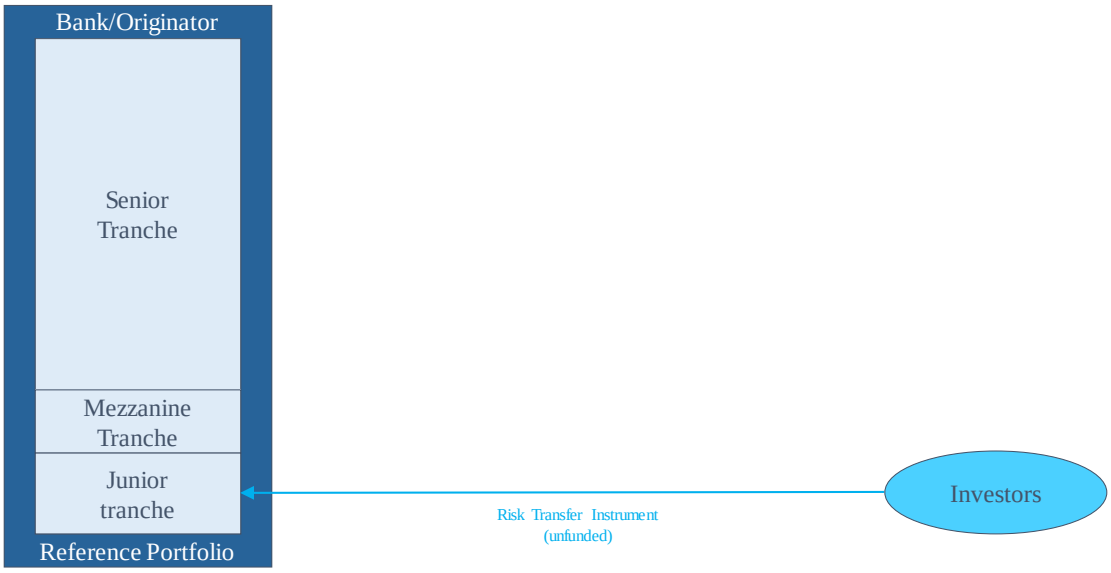


**Figure 2-2: synthetic securitisation by means of an unfunded credit protection.**

Consequently, it is actually common to have a simple structure involving only a credit protection agreement between the originator and the investor, where the credit protection is being provided on an unfunded basis (Figure 2-2), that is, *"a technique of credit risk mitigation where the reduction of the credit risk on the exposure of an institution derives*

*from the obligation of a third party to pay an amount in the event of the default of the borrower or the occurrence of other specified credit events"*[10].

Slightly more complicated is the structure where a "funded credit protection" is settled; that is a *"technique of credit risk mitigation where the reduction of the credit risk on the exposure of an institution derives from the right of that institution, in the event of the default of the counterparty or on the occurrence of other specified credit events relating to the counterparty, to liquidate, or to obtain transfer or appropriation of, or to retain certain assets or amounts, or to reduce the amount of the exposure to, or to replace it with, the amount of the difference between the amount of the exposure and the amount of a claim on the institution".*[11]

So, in case of a funded credit protection, collateral arrangements will also need to be put in place.

## *Collateral*

Collateral for a synthetic securitisation generally takes one of the following forms:

**Cash Collateral:** the most desirable form of collateral from the originator perspective, especially when this cash collateral is held on deposit with the originator itself. Indeed, this allows the protection buyer to achieve a zero per cent risk weight in respect of the protected tranche. But, this solution exposes the investor to the credit risk of its counterparty, since its right on the deposit generally constitutes an unsecured claim in the insolvency of the bank. For this reason, the protection seller can sometimes ask for a minimum rating requirement for the account bank, introducing a trigger level after which the deposit has to be transferred to a third party bank or invested in some high quality securities. This possibility introduces a potential impact on the risk-weighted amount of guaranteed tranches, which could be avoided by way of an alternative risk mitigation solution, that is the provision, by the originator, of collateral for its own obligation to repay the cash. In the

[10] Art. 4(1)(59) Regulation (EU) No 575/2013

[11] Art. 4(1)(58) Regulation (EU) No 575/2013

end, where the collateral actually takes the form of a cash deposit with a third party bank, the credit protection takes the form of an unfunded credit protection, with the risk weight applied to the protected tranches determined by the risk weight applied to the bank account.

**Securities Collateral:** the alternative to cash collateral is high quality securities, most of the time government securities or other securities issued by quasi-governmental or supranational entities. Unless the redemption date for the securities is aligned with the payment dates under the securitisation, liquidity risk could arise in the moment in which will be necessary selling some of the securities in order to be able to make a credit protection payment. For this reason, and for any other risk embedded in the collateral securities, a haircut will apply to the value of the collateral for the purpose of determining to what extent the credit risk of the protected tranche will be mitigated.

In most cases, a security arrangement will be basic in order to ensure that the claim against the collateral geared toward the satisfaction of credit protection payments is enforceable. Thereupon, we can recognise two different cases:

(i) where a SSPE is involved, it will grant the security in favour of both the protection buyer and its noteholders;

(ii) where the structure does not consider a SSPE, the security will be directly granted by the protection seller to the protection buyer.

### *The Securitised Portfolio*

The securitised portfolio generally needs to comply with some eligibility criteria and concentration limits which come from the compromise between the originator's risk appetite and the investor's one. Examples of these criteria are the types of exposures which can be included in the portfolio, the size of the exposures, their number, the relevant jurisdictions and the credit grade, but, anyway, the number of criteria included depends upon the willing of the counterparties.

The exposures a bank holds in its balance sheet tend to evolve during their life, both in terms of credit grade and in terms of actual exposure amount. Because of that, it is important to state in which moment such exposures have to meet the agreed eligibility

criteria. Usually, this moment is when they are included in the securitised portfolio, but not thereafter.

The reference portfolio can be formed by several type of assets, among which loans, mortgages, private equity investments, asset backed securities, etcetera.

The number of exposures included in the portfolio, so its granularity, often influence another important feature of the securitised exposures, that is if they will constitute a "disclosed pool" or a "blind pool".

"Blind pool" means that the investor will not have detailed information about the individual exposures and obligors; this situation is more likely more granular is the securitised portfolio, since, when the latter is composed by a high number of small exposure, what is really important is how those exposures are distributed into different clusters (e.g. size, credit parameters or sector category), instead of the features of the individual obligors.

The opposite case is the one of a securitised portfolio composed by a relatively small number of exposures, such as portfolios of project finance loans. In such circumstances, investors are more likely to ask for a "disclosed pool", since the due diligence on the single obligors will be the basis of the investment decision of the potential protection seller.

Still with respect to the reference portfolio, synthetic securitisation transactions can include either exposures which the bank already has in its balance sheet, or loans that the bank still has to supply. In this second case, the so called "Tranched Cover", the actual securitisation is achieved only after a so called "ramp-up" phase, during which the new lending portfolio is built.

In the end, while some synthetic securitisations have a static pool of exposures, which does not change over the life of the transaction, if not for the natural amortisation of the reference exposures, often the originator can replenish the securitised portfolio by adding new exposures if the conditions agreed at the beginning by the counterparties are met (e.g. prepayments). "Replenishment" is an efficient tool which allows the originator to maintain the original size of the securitised portfolio for a longer part of the life of the transaction.

### *Calls*

Call options included in most synthetic securitisations specify the events upon which the originator can terminate the transaction. The three most common type of calls are a regulatory call, a clean-up call and a time call option.

**Regulatory call options** could be included, for example, in order to prevent an increase of the risk-weighted exposure amounts as a consequence of the synthetic securitisation because of a change in the regulatory framework. Introducing a regulatory call option, the protection buyer has the right to terminate the transaction if a regulatory update has an adverse impact on him.

The CRR[12] defines a **clean-up call options** as "*a contractual option for the originator to repurchase or extinguish the securitisation positions before all of the underlying exposures have been repaid, when the amount of outstanding exposures falls below a specified level"*[13]. This allows the originator to terminate the transaction if the securitised portfolio is reduced to an agreed share of the original value, never more than 10%. The reason behind this kind of option is to stop economically inefficient transactions, where the protection of the investor is not needed anymore, given the residual small size of the securitised portfolio.

As anticipated, a third example of call options which can be included in synthetic securitisation transactions, is a **time call**; this allows the protection buyer for terminating the transaction on a specific date. The greater issue arising with time calls is that they could lead to a mismatch between the maturity of the credit protection and the maturity of the underlying exposures; so, the relevant jurisdiction, and how the latter decides to deal with this potential maturity mismatch, will be important in their application.

[12] Capital Requirements Regulation: Regulation (EU) No 575/2013

[13] Art. 242(2) Regulation (EU) No 575/2013

### 2.1.3 The Benefits of Synthetic Securitisation

It is possible to primarily identify three benefits which the synthetic securitisations lead to originator banks: this type of transactions is an effective tool in hedging credit risk, managing regulatory capital requirements and securitizing difficult asset classes.

#### *Hedging Credit Risk*

Synthetic securitisation allows the originator bank for both transferring the credit risk of the securitised assets, and having an active management of the portfolio credit risk, for example by diversifying the credit portfolio, so reducing the concentration risk, and/or improving the risk-return profile. The efficiency of this tool is especially due to the fact that the bank hedges the credit risk in respect of its lending activities without having to enter into individual arrangements on a loan-by-loan basis. Consequently, the originator is released from the responsibility to make any notification to the borrowers. Such operations therefore do not bear commercial risks which may arise due to the possible deterioration of business relations and mutual trust between the client and the bank.

Furthermore, the synthetic securitisation, mitigating the credit risk and the capital absorption, can generate benefits in the customer's risk adjusted pricing fixing, which could be used as a commercial tool applicable to the new origination financing.

#### *Capital Optimisation*

The capital optimisation is often the primary motivation a bank has entering a synthetic securitisation. Under the Basel framework, as implemented in the European Union (EU) through the CRR, a bank is required to hold capital against its risk-weighted exposures. Synthetic securitisations allow the bank to reduce these risk-weighted amounts and so free up capital which can be employed for new lending.

The amendment to the CRR proposed by the European Commission[14] increases the capital required against the bank's risk-weighted exposures, making synthetic securitisations a less effective tool in capital optimisation.

### *Securitisation of difficult asset classes*

In the end, a third driver for banks to enter into a synthetic securitisation is the possibility to securitise certain types of assets which are difficult to securitise through a true sale structure, either because of the terms of some types of obligations, or because of hurdles related to bank secrecy laws.

## 2.2 Effective regulation

In Europe, bank lending has traditionally played a significantly larger role in the financing of the corporate sector than the issuance of debt securities in the market. In aggregate, this great dependence makes the European economy, especially SMEs, more vulnerable when bank lending tightens, as happened in the financial crisis.

For this reason, a long-term project of the European Commission is to build a Capital Markets Union. Work is already underway to establish a single rulebook, with a large number of key reforms in the process of being implemented.

Under this project, the primary objectives identified by the Commission are:

- improving **access to financing** for all businesses across Europe (in particular SMEs) and investment projects such as infrastructure;
- increasing and **diversifying the sources of funding** from investors in the EU and all over the world; and
- making **markets work more effectively and efficiently**, linking investors to those who need funding at lower cost, both within Member States and cross-border.

The development of a high-quality securitisation market constitutes a building block of the Capital Markets Union and contributes to the Commission's priority goal to support a

[14] COM(2015) 473 final

return to sustainable growth and job creation. A high-quality EU securitisation framework will meet all the objectives mentioned before, promoting further integration of EU financial markets, helping the funding sources diversification, and so making it easier for banks to lend to households and businesses.

Following the US subprime crisis in 2007-08, the European securitisation markets have remained subdued, instead of recovering as have done markets in the US. This happened despite the fact that unlike the US, EU securitisation markets bore up the crisis relatively well, with realised losses on instruments originated in the EU having been very low compared to the US.

In recent public consultations[15], stakeholders have highlighted the key factors that are limiting a sustainable recovery in European securitisation markets. Besides the macroeconomic conditions, the availability of cheaper refinancing sources and regulatory uncertainties, what actually prevents a recovery in EU securitisation markets is the stigma still attached to this asset class. Investors and prudential supervisors main concern is about the risks associated with the securitisation process itself.

In response to the slow recovery of securitisations market, a number of public authorities have been looking again at the issue; but, in order to understand the impact of the proposed amendments to the securitisation framework, firstly, it is necessary to depict the effective regulation.

### 2.2.1 Regulation (EU) No 575/2013

The "bible" when analysing securitisations is the Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending Regulation (EU) No 648/2012.

This Regulation lays down uniform rules concerning general prudential requirements that institutions supervised under Directive 2013/36/EU shall comply with in relation to

[15] Conducted by the European Central Bank (ECB) and Bank of England (BoE), and by the Basel committee of Banking Supervision (BCBS) and International Organization of Securities Commissions (IOSCO).

several items, among which, as anticipated, the most relevant in analysing synthetic transactions are the own funds requirements relating to credit risk.[16]

As a first step, it is stated that institutions shall apply either the Standardised Approach or, if permitted by the competent authorities, the Internal Ratings Based Approach, to calculate their risk-weighted exposure amounts for the purpose of total risk exposure calculation needed to determine own funds requirements.

## *Standardised Approach*[17]

Under the **Standardised Approach** the application of risk weights shall be based on the exposure class to which the exposure is assigned[18] and its credit quality[19].

| ***External rating*** | *AAA-AA* | *A* | *BBB* | *BB* | *B* | *Below B* | |
|---|---|---|---|---|---|---|---|
| ***Credit quality step*** | *1* | *2* | *3* | *4* | *5* | *6* | *Unrated* |
| ***Retail exposures*** | | | | *6.0%* | | | |
| ***SME retail loans*** | | | | *4.6%* | | | |
| ***Residential mortgages*** | | | | *2.8%* | | | |
| ***(CRR Article 125 compliant)*** | | | | *(2.13% for residential mortgage exposures to SMEs borrowers)* | | | |
| ***Corporate exposures (non-SME)*** | *1.6%* | *4%* | *8%* | *8%* | *12%* | *12%* | *The higher of 8% and capital resulting from sovereign risk weight (taking into account the SME supporting factor 0.7619)* |
| ***Corporate exposures (SME)*** | *1.22%* | *3.05%* | *6.10%* | *6.10%* | *9.14%* | *9.14%* | |
| ***Securitisation*** | *1.6%* | *4%* | *8%* | *28%* | *100%* | *100%* | *100%* |
| ***Re-securitisation*** | *3.8%* | *8%* | *18%* | *52%* | *100%* | *100%* | *100%* |

**Table 2-1: Capital charges for different exposure classes under the Standardised Approach**

The Table above, summarises the capital charges applicable to different exposure classes defined in the CRR under the Standardised Approach. The capital charge is calculated as the product of the applicable risk weight provided for under the Standardised Approach and the 8% minimum capital requirement assuming a credit conversion factor of 100% (on balance sheet items).

An external credit assessment may be used to determine the risk weight of an exposure under the Standardised Approach only if it has been issued by an External Credit

[16] *CAPITAL REQUIREMENTS FOR CREDIT RISK*: Title II Regulation (EU) No 575/2013

[17] Chapter 2 Regulation (EU) No 575/2013

[18] Article 112 Regulation (EU) No 575/2013

[19] Chapter 2 (Section 2) Regulation (EU) No 575/2013

Assessment Institution (ECAI)[20] or has been endorsed by an ECAI; otherwise, the exposure will be considered unrated.

### *Internal Ratings Based Approach*[21]

Where the set out conditions are met, the competent authority shall permit institutions to calculate their risk-weighted exposure amounts using the **Internal Ratings Based Approach** (hereinafter referred to as 'IRB Approach').

The permission to the use the IRB Approach, shall be required for each exposure class and for each rating system[22] and internal model approaches to equity exposures and for each approach to estimating LGDs and conversion factors used. So, the same bank is allowed to use both the explained approaches, the Standardised Approach and the IRB Approach, but, obviously, for different exposure classes.

As in the case of the Standardised approach, the regulation specifies the exposure classes to which each exposure shall be assigned[23], that is:

(a) exposures to central governments and central banks;

(b) exposures to on institutions;

(c) exposures to corporates;

(d) retail exposures;

(e) equity exposures;

(f) **items representing securitisation positions**;

(g) other non-credit-obligation assets.

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[20] Art. 4(1)(98) Regulation (EU) No 575/2013

*"'external credit assessment institution' or 'ECAI' means a credit rating agency that is registered or certified in accordance with Regulation (EC) No 1060/2009 of the European Parliament and of the Council of 16 September 2009 on credit rating agencies ( 1 ) or a central bank issuing credit ratings which are exempt from the application of Regulation (EC) No 1060/2009"*

[21] Chapter 3 Regulation (EU) No 575/2013

[22] Art. 142 (1)(1) Regulation (EU) No 575/2013

*"'rating system' means all of the methods, processes, controls, data collection and IT systems that support the assessment of credit risk, the assignment of exposures to rating grades or pools, and the quantification of default and loss estimates that have been developed for a certain type of exposures"*

[23] Art. 147 Regulation (EU) No 575/2013

Before focusing on the items representing securitisation positions, it is important to notice what the regulation considers "retail exposures", since they will have a special treatment in the calculation of the risk weighted exposure amounts.

An exposure to be considered a retail exposure, shall be either an exposure to one or more natural persons, or an exposure to an SME; furthermore, it shall not be managed just as individually as exposures in the corporate exposure class, but they shall be treated by the institution in its risk management consistently over time and in a similar manner, each of them representing only one of a significant number of similarly managed exposures.

Now, in order to appreciate synthetic securitisations as a capital optimisation tool, it is basic to compare how the risk weighted exposure amounts are computed for individual exposures with how are they computed for securitised portfolios.

[24]The risk weighted exposure amounts for exposures to corporates, institutions and central governments and central banks shall be calculated according to the following formulae:

$$\text{Risk weighted exposure amount} = \text{RW} \times \text{exposure value}$$

where the risk weight RW is defined as

- if PD[25] = 0, RW shall be 0, since there is not a probability of incurring in any losses;
- if PD = 1, i.e. for defaulted exposures, the RW depends on if the credit institution either applies the LGD[26] values set out by regulation,[27] or uses its own estimates of LGDs. In the first case the RW shall be zero; instead, in the second one, RW shall be $\text{RW} = \max[0, 12.5 * (\text{LGD} - \text{EL}_{\text{BE}})]$, where the expected loss[28] best estimate

[24] Art. 153 Regulation (EU) No 575/2013

[25] Art. 4(1)(54) Regulation (EU) No 575/2013
*"'probability of default' or 'PD' means the probability of default of a counterparty over a one year period"*

[26] Art. 4(1)(55) Regulation (EU) No 575/2013
"*'loss given default' or 'LGD' means the ratio of the loss on an exposure due to the default of a counterparty to the amount outstanding at default"*

[27] Article 161(1) Regulation (EU) No 575/2013

[28] Art. 5(3) Regulation (EU) No 575/2013

($EL_{BE}$) shall be the institution's best estimate of expected loss for the defaulted exposure, considering also the further potential losses during the recovery period.

- if 0 < PD < 1

$$RW = \left(LGD * N\left(\frac{1}{\sqrt{1-R}} * G(PD) + \sqrt{\frac{R}{1-R}} * G(0.999)\right) - LGD * PD\right) * \frac{1+(M-2.5)*b}{1-1.5*b} * 12.5 * 1.06$$

where:

N(x) is equal to the cumulative distribution function for a standard normal random variable.

G(Z) denotes the inverse cumulative distribution function for a standard normal random variable (i.e. the value x such that N(x) = z)

R denotes the coefficient of correlation, is defined as

$$\mathrm{R} = 0.12 * \frac{1 - \mathrm{e}^{-50*\mathrm{PD}}}{1 - \mathrm{e}^{-50}} + 0.24 * \left(1 - \frac{1 - \mathrm{e}^{-50*\mathrm{PD}}}{1 - \mathrm{e}^{-50}}\right)$$

b is the maturity adjustment factor, which is defined

$$\mathrm{b} = (0.11852 - 0.05478 * \ln(\mathrm{PD}))^2$$

Furthermore, for all exposures to large financial sector entities and to unregulated financial entities, the co-efficient of correlation is multiplied by 1.25.

For exposures to companies where the total annual sales for the consolidated group of which the firm is a part is less than EUR 50 million, institutions may use the following correlation formula for the calculation of risk weights for corporate exposures.

$$\mathrm{R} = 0.12 * \frac{1-\mathrm{e}^{-50*\mathrm{PD}}}{1-\mathrm{e}^{-50}} + 0.24 * \left(1 - \frac{1-\mathrm{e}^{-50*\mathrm{PD}}}{1-\mathrm{e}^{-50}}\right) - 0.04 * \left(1 - \frac{\min\{\max\{5,S\},50\}-5}{45}\right)$$

In this formula S is expressed as total annual sales in millions of Euros with EUR 5 million ≤ S ≤ EUR 50 million. Reported sales of less than EUR 5 million shall be treated as if they were equivalent to EUR 5 million.

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*"'expected loss' or 'EL' means the ratio of the amount expected to be lost on an exposure from a potential default of a counterparty or dilution over a one year period to the amount outstanding at default"*

[29] The risk-weighted exposure amounts for retail exposures shall be calculated according to the following formulae:

Risk weighted exposure amount = RW × exposure value

where the risk weight RW is defined as follows:

if PD = 1, i.e., for defaulted exposures, RW shall be

$$\mathrm{RW} = \max[0, 12.5 * (\mathrm{LGD} - \mathrm{EL_{BE}})]$$

if 0 < PD < 1, i.e., for any possible value for PD other than under (i)

$$RW = \left(LGD * N\left(\frac{1}{\sqrt{1-R}} * G(PD) + \sqrt{\frac{R}{1-R}} * G(0.999)\right) - LGD * PD\right) * 12.5 * 1.06$$

where:

N(x) is equal to the cumulative distribution function for a standard normal random variable.

G(Z) denotes the inverse cumulative distribution function for a standard normal random variable (i.e. the value x such that N(x) = z)

R denotes the coefficient of correlation, is defined as

$$\mathrm{R} = 0.03 * \frac{1 - \mathrm{e}^{-35*\mathrm{PD}}}{1 - \mathrm{e}^{-35}} + 0.16 * \left(1 - \frac{1 - \mathrm{e}^{-35*\mathrm{PD}}}{1 - \mathrm{e}^{-35}}\right)$$

Concerning the default of an obligor a default shall be considered to have occurred with regard to a particular obligor when either the institution considers that the obligor is unlikely to pay its credit obligations to the institution, the parent undertaking or any of its subsidiaries in full, without recourse by the institution to actions such as realising security, or the obligor is past due more than 90 days on any material credit obligation to the institution, the parent undertaking or any of its subsidiaries.

Synthetic securitisations are a way to mitigate the credit risk related to obligors' default. Under the CRR, an institution may use as eligible credit protection the following types of credit derivatives:

(a) credit default swaps;

[29] Art. 154 Regulation (EU) No 575/2013

(b) total return swaps;

(c) credit linked notes to the extent of their cash funding.

Alternatively, it is allowed to use any instruments that may be composed of such credit derivatives or that are economically effectively similar, as eligible credit protection.

Investments in credit linked notes issued by the lending institution may be treated as cash collateral for the purpose of calculating the effect of funded credit protection provided that the credit default swap embedded in the credit linked note qualifies as eligible unfunded credit protection.

### *Securitisation*[30]

An originator institution of a synthetic securitisation may calculate risk-weighted exposure amounts, and, as relevant, expected loss amounts, for the securitised exposures of the portfolio, if both significant credit risk is considered to have been transferred to third parties either through funded or unfunded credit protection, and the originator institution applies a 1 250 % risk weight to all securitisation positions it holds in this securitisation or deducts these securitisation positions from Common Equity Tier 1 items.

Significant credit risk shall be considered to have been transferred where the originator institution is able to demonstrate, in every case of a securitisation, that the reduction of own funds requirements which it achieves by the securitisation is justified by a commensurate transfer of credit risk to third parties. In any case, the risk-weighted exposure amounts of the mezzanine securitisation positions held by the originator institution do not have to exceed the 50 % of the risk weighted exposure amounts of all mezzanine securitisation positions existing in this securitisation; alternatively, where there are no mezzanine securitisation positions, the originator institution shall not have to hold more than 20 % of the exposure values of the securitisation positions that would be subject to deduction from Common Equity Tier 1 or a 1250 % risk weight.

[30] Chapter 5 Regulation (EU) No 575/2013

Under the IRB Approach, the calculation of risk weighted exposure amounts has to comply with the following hierarchy of methods:

(a) for a rated position or a position in respect of which an inferred rating may be used, the institution shall calculate the risk-weighted exposure amount by applying the relevant risk weight to the exposure value and multiplying the result by 1,06. The relevant risk weight shall be the risk weight as laid on the ground of the exposure's credit assessment;

(b) for an unrated position the institution may use the Supervisory Formula Method;

(c) in all other cases, a risk weight of 1250 % shall be assigned to securitisation positions which are unrated;

Under the **Supervisory Formula Method**, the risk weight for a securitisation position shall be calculated as follows subject to a floor of 20 % for re-securitisation positions and 7 % for all other securitisation positions:

$$12.5 * \frac{\mathrm{S[L+T]} - \mathrm{S[L]}}{\mathrm{T}}$$

where:

$$S[x] = \begin{cases} x, & when\ x \le K_{IRBR} \\ K_{IRBR} + K[x] - K[K_{IRBR}] + \left(1 - e^{\left(\frac{\omega * (K_{IRBR} - x)}{K_{IRBR}}\right)}\right) * \frac{d * K_{IRBR}}{\omega} & when\ x > K_{IRBR} \end{cases}$$

where:

$$\mathrm{h} = \left(1 - \frac{\mathrm{K_{IRBR}}}{\mathrm{ELGD}}\right)^{\mathrm{N}}$$

$$\mathrm{c} = \frac{\mathrm{K_{IRBR}}}{1-\mathrm{h}}$$

$$\mathrm{v} = \frac{(\mathrm{ELGD} - \mathrm{K_{IRBR}}) * \mathrm{K_{IRBR}} + 0.25 * (1 - \mathrm{ELGD}) * \mathrm{K_{IRBR}}}{\mathrm{N}}$$

$$\mathrm{f} = \left(\frac{\mathrm{v} + \mathrm{K_{IRBR}^2}}{1-\mathrm{h}} - \mathrm{c}^2\right) + \frac{(1 - \mathrm{K_{IRBR}}) * \mathrm{K_{IRBR}} - \mathrm{v}}{(1-\mathrm{h}) * \tau}$$

$$\mathrm{g} = \frac{(1-\mathrm{c}) * \mathrm{c}}{\mathrm{f}} - 1$$

$$\mathrm{a} = \mathrm{g} * \mathrm{c}$$

$$\mathrm{b} = \mathrm{g} * (1 - \mathrm{c})$$

$$\mathrm{d} = 1 - (1 - \mathrm{h}) * (1 - \mathrm{Beta}[\mathrm{K_{IRBR}}; \mathrm{a}.\, \mathrm{b}])$$

$$K[x] = (1 - h) * \big((1 - \text{Beta}[x; a, b]) * x + \text{Beta}[x; a + 1, b] * c\big)$$

$$\tau = 1000;$$

$$\omega = 20;$$

$\text{Beta}[x; a, b]$ = cumulative beta distribution with parameters a and b evaluated at x;

T = the thickness of the tranche in which the position is held, measured as the ratio of (a) the nominal amount of the tranche to (b) the sum of the nominal amounts of the exposures that have been securitised.

$K_{IRBR}$ = the ratio of (a) $K_{IRB}$ to (b) the sum of the exposure values of the exposures that have been securitised, and is expressed in decimal form;

L = the credit enhancement level, measured as the ratio of the nominal amount of all tranches subordinate to the tranche in which the position is held to the sum of the nominal amounts of the exposures that have been securitised.

N = the effective number of exposures calculated as

$$N = \frac{(\sum_i EAD_i)^2}{\sum_i EAD_i^2}$$

ELGD = the exposure-weighted average loss-given-default, calculated as follows

$$ELGD = \frac{\sum_i LGD_i * EAD_i}{\sum_i EAD_i}$$

where:

$LGD_i$ = the average LGD associated with all exposures to the $i^{th}$ obligor.

For securitisations in which materially all securitised exposures are retail exposures, institutions may, subject to permission by the competent authority, use the Supervisory Formula Method using the simplifications h=0 and v=0, provided that the effective number of exposures is not low and that the exposures are not highly concentrated.

Furthermore, capital requirements for credit risk on exposures to SMEs[31] shall be multiplied by the factor 0.7619.

[31] SME is defined in accordance with Commission Recommendation 2003/361/EC of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises:

***Article 2***

***Staff headcount and financial ceilings determining enterprise categories***

In the end, when a credit institution decides to call an external credit assessment to determine the risk weight of a securitisation position, this has to be issued or has to be endorsed by an ECAI.

*1. The category of micro, small and medium-sized enterprises (SMEs) is made up of enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding EUR 50 million, and/or an annual balance sheet total not exceeding EUR 43 million.*

*2. Within the SME category, a small enterprise is defined as an enterprise which employs fewer than 50 persons and whose annual turnover and/or annual balance sheet total does not exceed EUR 10 million.*

*3. Within the SME category, a microenterprise is defined as an enterprise which employs fewer than 10 persons and whose annual turnover and/or annual balance sheet total does not exceed EUR 2 million.*

# 3 How is the International Regulation Developing?

Term securitisation issuance declined markedly across jurisdictions from the onset of the financial crisis in 2007. Furthermore, the crisis highlighted several weaknesses in the Basel II securitisation framework, including concerns that it could generate insufficient capital for certain exposures.

In December 2014, the Basel Committee on Banking Supervision (BCBS) has published the Basel III document on revisions to the securitisation framework[32], which aims to address a number of shortcomings in the Basel II securitisation framework and to strengthen the capital standards for securitisation exposures held in the banking book.

Simultaneously, the Basel Committee and the International Organization of Securities Commissions (IOSCO) released a consultative document on Criteria for identifying simple, transparent and comparable securitisations.

Both the Basel III document on revisions to the securitisation framework, and the consultative document on Criteria for identifying simple, transparent and comparable securitisations, are examples of the several initiatives directed at reforming the securitisation market in order to foster its recovery.

The documents issued by BCBS and IOSCO have not any legal binding force, but they have the only aim of directing the regulation of the single countries participating to the worktable. So, the national, or supranational, banking authorities have to adopt the guidelines of the Basel Committee, making them actually law. In Europe, the European Commission and the European Banking Authority (EBA) led this process, the first one as legislator, with all its limits, of the European Union, and the latter as chief supervisor of the European banking system.

Besides the already cited documents, the regulatory development produced a large amount of discussion papers and consultative documents in order to clarify which should actually be the improvements to the Basel II framework, the result of which has been the

[32] Basel III Document: Revisions to the securitisation framework, Basel Committee on Banking Supervision, 11 December 2014

amending proposals for the Regulation (EU) No 575/2013 of the European Parliament and of the Council of the 30/09/15[33].

## 3.1 Regulatory Developments

On 14 October 2014, the European Banking Authority published the "*EBA Discussion Paper on simple standard and transparent securitisations*" as a response to the European Commission's call for advice of December 2013 related to the merits of, and the potential ways of, promoting a safe and stable securitisation market.

In this paper, the EBA outlined the recurring factors associated with the poor performance of certain securitisation products during the crisis, irrespective of the pre-crisis rating level; these include:

(i) misalignment of interest between originators and investors resulting in loose underwriting standards on the underlying exposures;

(ii) excessive leverage;

(iii) maturity transformation, and

(iv) complex structures.

Actually, what exacerbated the effect of their poor performance on the global financial crisis, has been the fact that complex transactions were assessed by external rating agencies according to wrong modelling assumptions and have been placed with investors in the absence of adequate transparency standards.

The following subparagraph illustrates the criteria used by rating agencies when they rate structured products and, especially, their weak points.

### 3.1.1 Structured Products Ratings

Credit rating agencies (CRAs) are used to assess the risk of borrower's default, and its associated financial loss, in the sale financial products. Their primary function is to benchmark the likelihood of a debtor's default by providing a credit rating.

[33] COM (2015) 472 final & COM(2015) 473 final

The prevalent view is that credit ratings are useful in reducing information asymmetries between issuers and buyers of debt securities. Thanks to their access to privileged information on the issuer, the agencies can verify the obligor's financial ability to repay its debt.

Currently, the three leading CRAs – Fitch, Moody's and Standard and Poor's – control 94%[34] of the global market.

They have different approaches in rating structured products; the criterion used by S&P and Fitch aims to ensure that the probability of a loss on a structured product with a certain rating is similar to the probability of a loss on a corporate bond with the same rating. The differences between the ratings assigned to a tranche by the two agencies were determined by differences in historical default behaviour estimates and different estimated probabilities of extreme default events. Instead, the criterion used by Moody's focuses on the expected loss of the structured product.

The rating of a structured product is in some sense a measure of quality. So, different ratings assigned by different agencies could raise the question of whether the credit ratings criteria permit arbitrage.

### *Credit Rating Models*

Rating agencies have been widely criticised once the global credit crisis started in 2007. Investors were prepared to buy products assessed with an AAA (Aaa) rating by rating agencies. Especially in case of true sale securitisations, these products had complex interdependent structures, but, in many instances, investors' reliance on ratings was so great that they did no analysis of their own. In the fall of 2007, many structured products were downgraded, which contributed to a panic in the market.

Panic was justified by the fact that rating agencies try to consider only permanent changes in a company's health when changing the company's rating ("through-the-cycle" rather than a "point-in-time" approach to rating).

[34] Source: Credit Ratings Agencies Regulation, House of Commons Library, 7 January 2016

The rating agencies employ models to determine the ratings for tranches, and the arrangers of these products, in order to avoid uncertainty, typically used to present a structure proposal to a rating agency before actually creating it, asking how the tranches would be rated. If they did not get the ratings they wanted, they adjusted the design of the structure to achieve the desired ratings. This is a basic difference between Asset Backed Securities (ABSs) and bonds, since the company issuing a bond has no easy way of restructuring itself to change the rating assigned to a bond.

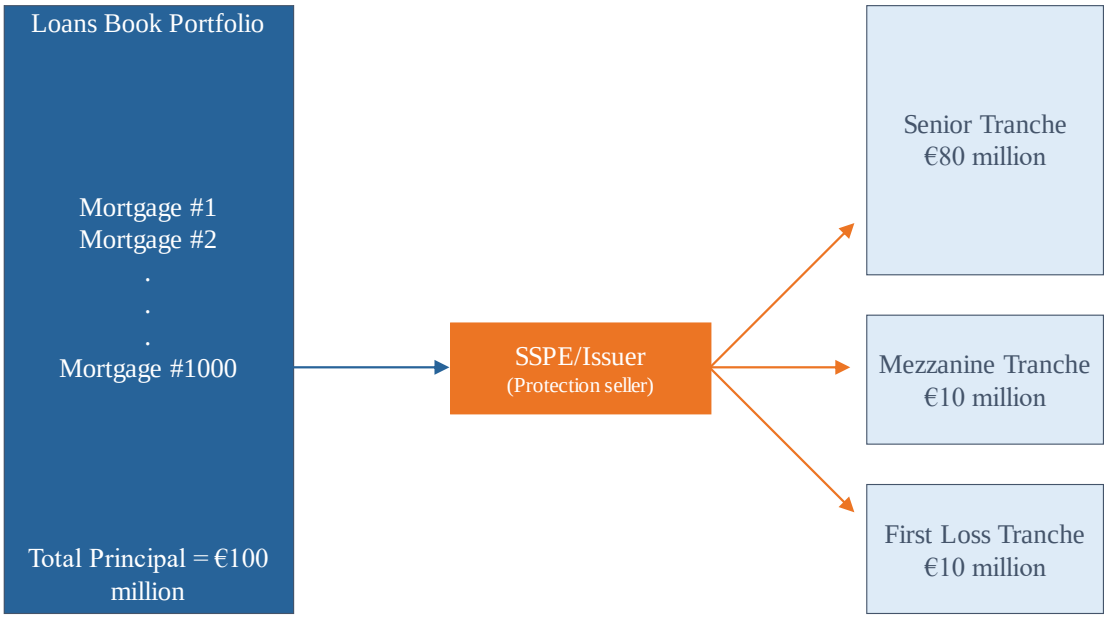


**Figure 3-1: Simple Example of a Mortgage ABS**

The rating of bonds is based on a mixture of judgment and analysis. Ratings agencies test whether the ratings are both reasonable and consistent over time. Otherwise, because of the relatively simplicity of understanding the nature of the assets underlying a securitisation and how these asset values may change, over time the approach to rating structured products became more model-based.

The literature never identified the choice between expected loss and probability of default as rating criterion for bonds an important issue. This could be considered reasonable since bond ratings are heavily dependent on judgment. However, the criterion used is crucial in the rating of structured products. Specifically, the probability of default criterion fuels an illusion that restructuring the cash flows from securities can create value.

The following example[35] will clarify the latter statement:

Assume a true sale securitisation transaction with the structure depicted in the diagram above.

As anticipated the three major credit agencies employ two different credit quality measures assessing their credit ratings. A necessary condition for a credit quality measure to be arbitrage-free is that, for every Portfolio X and every Portfolio Y that can be restructured from X, there be no credit quality dominance between X and Y. Indeed, a credit quality arbitrage occurs when a portfolio can be restructured into a new portfolio that has a higher value for at least some market participants.

Probability of loss does not satisfy the no-arbitrage condition.

Consider the portfolio tranching of the diagram above. The three tranches are responsible for losses in the ranges 0 to 10%, 10% to 20% and 20% to 100% of the Loans Book Portfolio. The resulting portfolio can be created from the original one without bearing any cost. The probability of loss for the first loss tranche of the securitised portfolio is the same as the probability of loss for the reference one. In general, the more senior tranches have a lower probability of loss than the reference portfolio because they will bear losses only when the first loss tranche is used up. As a result, the necessary condition for no arbitrage is violated. Part of portfolio Y, restructured from portfolio X has the same credit quality measure as Portfolio X (First Loss Tranche), and the rest of the portfolio has a lower credit quality measure.

It is easy to understand how the probability of loss as a credit measure criterion is an incentive for financial institutions to create multiple tranches from portfolios of loans. As more tranches are created, the violation of the no-arbitrage condition becomes greater.

Indeed, if probability of loss is the credit quality measure used for X and Y, then Y will always be more valuable than X to some investors even though X can be converted into Y without any cost.

[35] Ratings, Mortgage Securitisations, and the Apparent Creation of Value, John Hull and Alan White, University of Toronto, November 2011

The large number of ABS tranches created implied many quite thin tranches in the sense that they were responsible for a narrow range of losses. As a result, they tend to have "all-or-nothing" characteristics. They either experience no defaults or are completely wiped out. All-or-nothing properties mean that the expected loss given default is high.

The relation between the two criteria used by rating agencies is

$$\text{Expected Loss} = \text{Probability of Default} * \text{Loss Given Default}$$

So, it is clear that whether taking into consideration or not the loss given default in assigning a credit rating to a structured product could imply a huge difference.

| | *Time Horizon (Years)* | | | | |
|---|---|---|---|---|---|
| ***Rating*** | ***1*** | ***2*** | ***3*** | ***4*** | ***5*** |
| ***AAA*** | *0.00%* | *0.04%* | *0.17%* | *0.30%* | *0.44%* |
| ***AA*** | *0.04%* | *0.09%* | *0.20%* | *0.34%* | *0.46%* |
| ***A*** | *0.09%* | *0.24%* | *0.42%* | *0.63%* | *0.85%* |
| ***BBB*** | *0.27%* | *0.73%* | *1.21%* | *1.86%* | *2.56%* |
| ***BB*** | *1.00%* | *3.02%* | *5.47%* | *7.77%* | *9.80%* |
| ***B*** | *4.77%* | *10.67%* | *15.78%* | *19.79%* | *22.84%* |
| ***CCC-C*** | *28.31%* | *39.25%* | *45.51%* | *49.42%* | *52.35%* |

**Table 3-1: S&P Average Cumulative Default rates, 1981-2010**

| | *Time Horizon (Years)* | | | | |
|---|---|---|---|---|---|
| ***Rating*** | ***1*** | ***2*** | ***3*** | ***4*** | ***5*** |
| ***Aaa*** | *0.000%* | *0.000%* | *0.000%* | *0.001%* | *0.002%* |
| ***Aa*** | *0.002%* | *0.011%* | *0.033%* | *0.056%* | *0.078%* |
| ***A*** | *0.021%* | *0.083%* | *0.198%* | *0.297%* | *0.402%* |
| ***Baa*** | *0.231%* | *0.578%* | *0.941%* | *1.309%* | *1.678%* |
| ***Ba*** | *1.546%* | *3.031%* | *4.329%* | *5.385%* | *6.523%* |
| ***B*** | *6.391%* | *9.136%* | *11.57%* | *13.22%* | *14.88%* |
| ***Caa*** | *28.04%* | *31.35%* | *34.35%* | *36.43%* | *38.40%* |

**Table 3-2: Moody's Loss Rate Table**

For example, assume the first loss tranche of the Loans Book Portfolio to be characterised by the following credit measures:

Time Horizon = 5 years

PD = 0.18% (Both Scenario 1 & 2)

$LGD_1$ = 1% (Scenario 1)

$LGD_2$ = 90% (Scenario 2)

The probability of default will be the same in both scenarios:

Scenario 1: PD = 0.18% → AAA rating

Scenario 2: PD = 0.18% → AAA rating

Instead, the expected loss will be:

Scenario 1: $\mathrm{EL} = \mathrm{PD} * \mathrm{LGD} = 0.18\% * 1\% = 0.0018\%$ → Aaa rating

Scenario 2: $\mathrm{EL} = \mathrm{PD} * \mathrm{LGD} = 0.18\% * 90\% = 0.162\%$ → Aa rating

According to the tables above, if the credit agency bases its judgment on the PD, being either in Scenario 1 or in Scenario 2 will not have any impact on the credit rating of the tranche. But, looking at the EL, it becomes evident the different impact of a loss in the two scenarios, which should be reflected in a different credit rating.

The figure below stresses this point: looking only at the probability of default, the rating agency neglects how harsh the loss will be in the unlikely case it will occur.

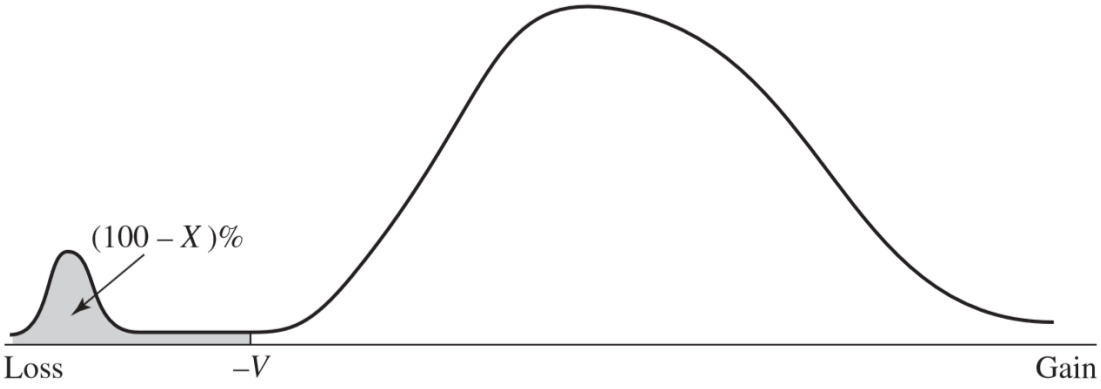


**Figure 3-2: Probability Distribution for Gain in Portfolio Value during Time T**

Scenario 1: $\mathrm{Loss} = \mathrm{LGD} * \mathrm{EAD} = 1\% * €10\mathrm{mln} = €100.000$

Scenario 2: $\mathrm{Loss} = \mathrm{LGD} * \mathrm{EAD} = 90\% * €10\mathrm{mln} = €9.000.000$

Where EAD means Exposure At Default, and in this example corresponds to the size of the first loss tranche. Even though, the probability of losses is very low, experiencing a loss of 1% or of 90% of the amount of capital invested should not be considered equivalent in credit quality terms.

The aforementioned recurring factors were related to a number of inefficiencies relating to the calibration of risk weights and a lack of incentives for good risk management, namely:

(i) Mechanistic reliance on external ratings;

(ii) Excessively low risk weights for highly-rated securitisation exposures;

(iii) Excessively high risk weights for low-rated senior securitisation exposures;

(iv) Cliff effects; and

(v) Insufficient risk sensitivity of the framework.

So, the EBA acknowledged that the securitisations regulation should incorporate a distinction between qualifying securitisations and other securitisations. The approved 'qualifying' securitisation, in order to qualify for a different treatment, should meet a list of criteria following a two-stage approach: first, criteria ensuring simplicity standardisation and transparency and, as a second step, they should meet criteria of minimum credit quality of the underlying exposures.

The proposed criteria to identify a simple, standard and transparent securitisation capture and mitigate the major drivers of risk of a securitisation that are not related to the underlying exposures, in the form of maximum risk weights, granularity criteria and regulatory underwriting standards.

Furthermore, since the crisis many regulatory reforms and initiatives, both at international and EU level, were been introduced, and so, the EBA recommended a systematic review of the entire regulatory framework applicable to securitisations, across the different regulations and regulatory authorities, on a stand-alone basis and in comparison to the regulatory framework applicable to other investment instruments, in order to avoid the risk of unintended differences in the regulatory treatment between securitisations and other investment instruments.

Indeed, looking at the securitisation market performances it results apparent the inappropriateness of a generalisation of securitisations as complex and poor performing products. Figure 3-4 below shows how the European securitisation market grew

dramatically in the run up to the crisis, and that thereafter securitisation outstanding has contracted in the EU.

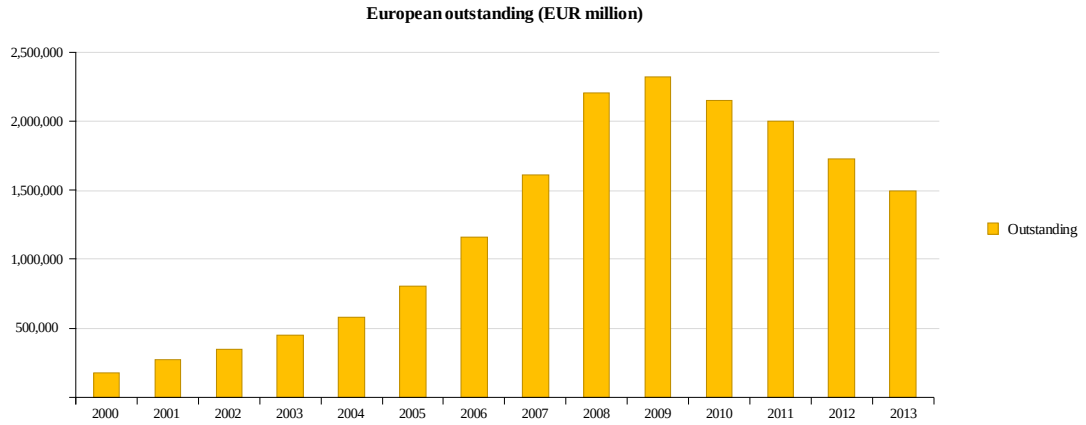


**Figure 3-3: European outstanding (source: SIFMA/AFME)**

But, a comparative analysis presented by the EBA, and based on the historical performance of ratings issued by S&P, demonstrates how much diverse securitisation performances have been.[36]

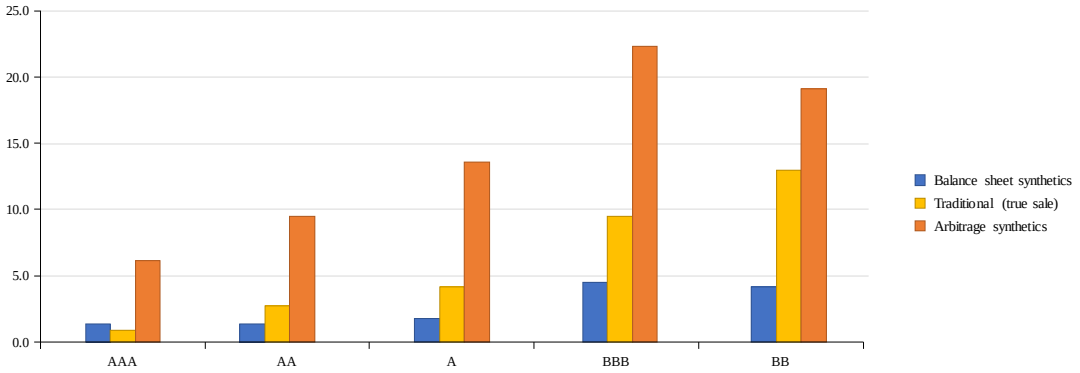


**Figure 3-4: Lifetime default rate (%): balance sheet synthetic tranches, arbitrage synthetic tranches, traditional tranches, per rating grade (source: S&P, as of 2014 and the EBA calculations)**

The analysis looks into the historical performance of balance-sheet synthetic securitisation transactions by comparing them with arbitrage synthetic and true-sale transactions.

[36] THE EBA REPORT ON SYNTHETIC SECURITISATION, EBA/Op/2015/26

The S&P evidence suggests that arbitrage synthetics performed materially worse than both balance sheet transactions and traditional securitisation transactions; but, the default performance of balance sheet synthetics is comparable to that of traditional securitisations for high rating grades whereas it is better for lower rating grades.

In support of this last evidence, Figure 3-5 compares balance sheet synthetic tranches to true-sale tranches rated by S&P per asset class, using the average number of notches of rating transition over the life of the tranche as a measure of average credit quality change incurred by the tranches. Balance sheet synthetic tranches appear to perform better than true sale tranches across asset classes.

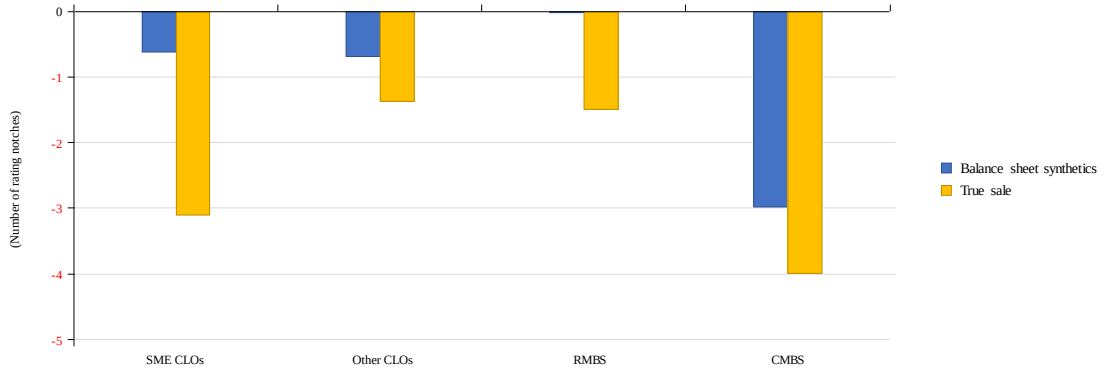


**Figure 3-5: Average change in credit quality (notches) synthetic securitisation vs. true-sale securitisation per asset class (Source: S&P as of 2014)**

These evidences show as balance sheet synthetic securitisations have been the soundest transactions among all types of securitisation.

Nevertheless, in a first stage the preferential regulatory treatment for simple, transparent and standardised (STS) securitisations on the verge to be introduced within the EU, effectively included synthetic securitisations only partially, requesting additional requirements to be met. The reasons behind this harsh treatment are related to the fact that they do not involve a true sale of the securitised exposures from the originator to the securitisation issuer, and the limited data available because of their private nature.

But, the EBA recommendations as the European Commission's amendment proposals usually follow the backbone of each regulatory framework change: the Basel Committee on Banking Supervision's issuances.

### 3.1.2 Basel III Revisions to the Securitisation Framework

As anticipated, the Basel Committee revised securitisation framework document aimed to address a number of shortcomings in the Basel II securitisation framework and to strengthen the capital standards for securitisation exposures held in the banking book.

Probably, the major change in this document relative to the Basel II securitisation framework is the hierarchy of approaches.

The Basel II framework consists of two hierarchies, depending on the approach to credit risk used for the type of underlying exposures securitised: the SA securitisation framework is addressed to less sophisticated banks, whereas the IRB approach is addressed to more sophisticated banks and allows for a more granular assessment of the relevant risks associated with the securitisation exposures concerned.

Overall, the Basel II framework includes four Ratings-Based Approach (RBA) look-up tables (two under the IRB securitisation framework and two others under the SA securitisation framework), two internal approaches for non-rated exposures (Supervisory Formula Approach (SFA) and Internal Assessment Approach (IAA)), and several exceptional treatments.

The Committee has revised the hierarchy to reduce the reliance on external ratings as well as to simplify it and limit the number of approaches.

The "Securitisation Internal Ratings-Based Approach" (SEC-IRBA) is at the top of the revised hierarchy. The underlying model is the Simplified Supervisory Formula Approach (SSFA) and it uses $K_{IRB}$ information as a key input. $K_{IRB}$ is the capital charge for the underlying exposures using the IRB framework (either the advanced or foundation approaches). This approach is reserved to banks which have (i) a supervisory-approved IRB model for the type of underlying exposures in the securitisation pool; and (ii) sufficient information to estimate $K_{IRB}$.

A bank that cannot calculate $K_{IRB}$ for a given securitisation exposure would have to use the "Securitisation External Ratings-Based Approach" (SEC-ERBA), provided that this method is permitted in its jurisdiction. A bank that cannot use either of the previous approaches would use the "Securitisation Standardised Approach" (SEC-SA), with a

generally more conservative calibration and using $K_{SA}$ (the capital charge for the underlying exposures using the Standardised Approach for credit risk) as input.

In the residual cases in which a bank cannot use either SEC-IRBA, SEC-ERBA, or SEC-SA for a given securitisation exposure, the risk weight assigned to the underlying exposure will be of 1250%.

The Basel Committee considers the revised Basel III securitisation framework a significant improvement to the Basel II framework in terms of reducing complexity of the hierarchy and the number of approaches.

Furthermore, the revised hierarchy of approaches relies only on the information that is available to the bank and on the type of analysis and estimations that it can perform on a specific transaction.

The mechanistic reliance on external ratings has been reduced, not only because of the downgraded position of the Rating Based Approach on the hierarchy, but also because other relevant risk drivers, as maturity and non-senior tranches thickness, have been incorporated into the SEC-ERBA.

Beside the revised hierarchy of approaches, there have been introduced further changes to the calculation methodologies.

The SFA formula has been replaced by an approach based on the Simplified Supervisory Formula Approach (SSFA). In addition to credit enhancement, tranche thickness and $K_{IRB}$, as under current SSFA, capital requirement would depend on a capital surcharge, the "p" parameter, which is a function of portfolio LGD, $K_{IRB}$, type of exposure, portfolio granularity and maturity of the tranche. The new SSFA can be used by a bank following the Standardised Approach too, but the parameter p would be set equal to 1 and the $K_{IRB}$ parameter replaced with its equivalent $K_{SA}$.

In addition, the Basel Committee set for all approaches a Risk-Weight Floor of 15% (other than re-securitisations).

Indeed, for re-securitisations, only an adjusted version of the Standardised Approach would be available; it consists of the SSFA with the parameter p set at 1.5 and a floor of 100%.

In fine, other improvements in terms of risk sensitivity and prudence of the regulatory framework, have been suggested, together with EBA recommendations, and as a result adopted in the Securitisation Regulation[37] and the 575 amendment proposal[38] of the EC.

## 3.2 European Commission Proposal

According to the European Commission, promoting the development of a securitisation market based on sound practices will contribute to its priority objective of a return to sustainable growth and job creation.

The EC identified two major steps necessary to this resolution: first, developing a common substantive framework for securitisations for all participants in this market and identifying a subset of transactions meeting certain eligibility criteria: simple, transparent and standardised securitisations or STS securitisations. This is the subject of the Commission Proposal for a Securitisation Regulation. The second step is to amend the regulatory framework of securitisations in EU law, including in the area of capital charges for credit institutions and investment firms originating, sponsoring or investing in these instruments, in order to provide for a more risk-sensitive regulatory treatment for STS securitisations.

Such differentiated regulatory treatment already existed in certain legislative instruments, (e.g. Liquidity Coverage Ratio), but, this needed to be complemented by an amendment to the regulatory capital treatment for securitisations in Regulation No. 575/2013 (the "CRR").

The amendment to the CRR forms a legislative package with the proposed Securitisation Regulation. The development of STS eligibility criteria would not be

[37] Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL laying down common rules on securitisation and creating a European framework for simple, transparent and standardised securitisation and amending Directives 2009/65/EC, 2009/138/EC, 2011/61/EU and Regulations (EC) No 1060/2009 and (EU) No 648/2012

[38] Proposal for a REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL amending Regulation (EU) No 575/2013 on prudential requirements for credit institutions and investment firms

individually sufficient to achieve the objective of reviving EU securitisation markets if not accompanied with a new prudential treatment better reflecting their specific features.

Capital requirements for positions in securitisation are set out in the amendment proposal, while eligibility criteria for STS securitisations are contained in the Securitisation Regulation.

### 3.2.1 Securitisation Regulation

The concept of "simple, transparent and standardised" (STS) refers to the process by which the securitisation is structured and not the underlying credit quality of the assets involved.

Furthermore, STS does not mean free of risks, but it means that the product respects a number of criteria and that a prudent and diligent investor will be able to analyse the risk involved.

The Securitisation Regulation proposal allows only "true sale" securitisation to become STS. This initial exclusion of synthetic securitisation transactions was due to, on one hand, the additional complexity added related to the content of the financial guarantee or derivative contract, together with the counterparty credit risk embedded; on the other hand, the insufficient clarity on which synthetic securitisations should be considered STS and under which conditions. The Commission, in its proposal amendment of the CRR (Article 270) has introduced an element of differentiation in the treatment of synthetic transactions, whereby the applicability of STS risk weights is extended to exposures arising from senior synthetic securitisation tranches retained by originator institutions within specific transactions.

#### *Simplicity*

Criteria on simplicity refers to the homogeneity of underlying assets with simple characteristics, and a transaction structure that is not overly complex.

The requirements relating to simplicity outlined by the European Commission especially regard the underlying exposures. They have to be completely compliant with predetermined eligibility criteria; they have to be homogenous in terms of asset type and

they cannot include securitisations (i.e. re-securitisations are not included in the STS framework); moreover, they shall be originated in the ordinary course of the originator's or the original lender's business. In the end, the underlying exposures, at the time of transfer to the SSPE, shall not include exposures in default, and they shall have, at the time of transfer of the exposures, made at least one payment.

### *Transparency*

Criteria on transparency provide investors with sufficient information on the underlying assets, the structure and the parties involved in the transaction, thereby promoting a more comprehensive and thorough understanding of the risk involved.

In particular, the originator, sponsor, and SSPE shall provide access to data on static and dynamic historical default and loss performance, such as delinquency and default data, for substantially similar exposures to those being securitised to the investor before investing.

In general, the originator, sponsor and SSPE shall be jointly responsible for making available to potential investors all information required[39] before pricing.

### *Standardisation*

Criteria on standardisation enable a more straightforward comparison across securitisation products within an asset class. Importantly, those criteria should appropriately take into account differences across jurisdictions.

First among requirements relating to standardisation is the compliance with the risk retention requirement, which consists in a material net economic interest in the securitisation of not less than 5 %.

Furthermore, any referenced interest payments under the securitisation shall not reference complex formulae or derivatives. Derivatives can only be used for the purpose of hedging currency risk and interest rate risk.

[39] Art. 5 COM(2015) 472 final

In the end, the transaction documentation shall clearly specify any aspect of the contractual obligations, duties and responsibilities of the actors of the securitisation transaction, and the definitions, remedies and actions relating to delinquency and default of debtors, debt restructuring, debt forgiveness, forbearance, payment holidays, losses, charge offs, recoveries and other asset performance remedies in clear and consistent terms; the transaction documentation shall include clear provisions that facilitate the timely resolution of conflicts between different classes of investors, too.

### 3.2.2 The CRR Amendment Proposal

This Regulation forms a legislative package with the proposed Securitisation Regulation. It sets out the capital requirements for positions in securitisation, including the more sensitive treatment for STS securitisations.

The proposal of the European Commission replaces the entire Chapter 5 of Title II, Part Three of CRR, but the most relevant changes are contained in Articles 245 to 270a. These have been implemented on the basis of the revised Basel Committee on Banking Supervision framework. Instead, Section 2 (Recognition of significant risk transfer), part of Section 3 (Subsection 1: General Provisions) and Section 4 (External credit Assessments) have been subject to limited refinements.

New Articles 254 to 270bis contain a new hierarchy of approaches, introducing a risk weight floor of 15% for all securitisation exposures and for all the three approaches.

Furthermore, New Articles 260, 262, and 264 provide a more risk-sensitive prudential treatment for STS securitisations in line with the EBA report on qualifying securitisations proposal. All the 3 approaches are re-calibrated in order to generate lower capital requirements for positions in STS transactions, and, in addition, senior positions in STS securitisations will also benefit from a lower floor of 10%.

The Section 3 (Subsection 3: Methods to Calculate Risk-Weighted Exposure Amounts) contains the methods, set out by the Regulation, the institutions shall use to calculate risk-weighted exposure amounts in relation to all positions they hold in a securitisation.

### *Article 258. Conditions for the use of the Internal Ratings-Based Approach (SEC-IRBA)*

Institutions shall use the SEC-IRBA to calculate risk-weighted exposure amounts in relations to a securitisation when the position is backed by an IRB pool or, alternatively, a mixed pool, provided that, the institution is able to calculate $K_{IRB}$ on at a minimum of 95% of the underlying risk-weighted exposure amount.

In any case, competent authorities may preclude the use of the SEC-IRBA approach where securitisations have highly complex or risky features.

### *Article 259. Calculation of risk-weighted exposure amounts under the SEC-IRBA*

Under the SEC-IRBA, the risk weighted exposure amount for a securitisation position shall be calculated by multiplying the exposure value by the applicable risk weight determined as follows, in all cases subject to a floor of 15%:

$RW = 1250\%$ when $D \leq K_{IRB}$

$RW = 12.5 * K_{SSFA(KIRB)}$ when $A \geq K_{IRB}$

$$RW = \left[\left(\frac{K_{IRB}-A}{D-A}\right) * 12.5\right] + \left[\left(\frac{D-K_{IRB}}{D-A}\right) * 12.5 * K_{SSFA(K_{IRB})}\right] \quad \text{when } A < K_{IRB} < D$$

where:

$K_{IRB}$ is the capital charge of the pool of underlying exposures.

D is the detachment point, that is the greater of zero and the ratio of the outstanding balance of the pool of underlying exposures in the securitisation minus the outstanding balance of all tranches that rank senior to the tranche containing the relevant securitisation position to the outstanding balance of all the underlying exposures in the securitisation.

A is the attachment point, that is the greater of zero and the ratio of the outstanding balance of the pool of underlying exposures in the securitisation minus the outstanding balance of all tranches that rank senior or pari passu to the tranche containing the relevant securitisation position to the outstanding balance of all the underlying exposures in the securitisation.

$$K_{SSFA(K_{IRB})} = \frac{e^{a*u} - e^{a*l}}{a(u-l)}$$

where:

$$a = -\left(\frac{1}{(p * K_{IRB})}\right)$$

$$u = D - K_{IRB}$$

$$l = \max(A - K_{IRB}; 0)$$

where:

$$p = \max\left[0.3; \left(A + B * \left({}^{1}/_{N}\right) + C * K_{IRB} + D * LGD + E * M_T\right)\right]$$

where:

N is the effective number of exposures in the pool of underlying exposure, calculated as follows

$$N = \left(\frac{(\sum_i EAD_i)^2}{\sum_i EAD_i^2}\right)$$

where $EAD_i$ represents the exposure-at-default associated with the $i^{th}$ instrument in the pool.

LGD is the exposure-weighted average loss-given-default of the pool of underlying exposures, calculated as follows

$$LGD = \frac{\sum_i LGD_i * EAD_i}{\sum_i EAD_i}$$

where $LGD_i$ represents the average LGD associated with all exposures to the $i^{th}$ obligor.

$M_T$ is the maturity of the tranche, which may be determined either as the weighted–average maturity of the contractual payments due under the tranche:

$$M_T = \frac{\sum_t t * CF_t}{\sum_t CF_t}$$

where $CF_t$ denotes all contractual payments (principal, interests and fees) payable by the borrower during period t; or the final legal maturity of the tranche in accordance with the following formula:

$$M_T = 1 + (M_L - 1) * 80\%$$

where $M_L$ is the final legal maturity of the tranche.

Institutions shall only use the final legal maturity of the tranche to determine its maturity ($M_T$) where the contractual payments due under the tranche are conditional or dependent

upon the actual performance of the underlying exposures. In all cases, the determination of a tranche maturity shall be subject to a floor of one year and a cap of five years.

The parameters A, B, C, D, and E shall be determined according to the following look-up table:

| | | *A* | *B* | *C* | *D* | *E* |
|---|---|---|---|---|---|---|
| ***Wholesale*** | ***Senior**, granular (N≥25)* | *0* | *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* | *0* | *-7.48* | *0.71* | *0.24* |
| | ***Non-senior*** | *0* | *0* | *-5.78* | *0.55* | *0.27* |

**Table 3-3: A, B, C, D, E parameters**

If the underlying IRB pool comprises both retail and non-retail exposures, the pool shall be divided into one retail and one non-retail sub-pool and, for each sub-pool, a separate p-parameter shall be estimated. Subsequently, a weighted average p-parameter for the transaction shall be calculated on the basis of the p-parameters of each sub-pool and the nominal size of the exposures in each sub-pool.

Where an institution applies the SEC-IRBA to a mixed pool, the calculation of the p-parameter shall be based on the underlying exposures subject to the IRB Approach only.

### *Article 260. Treatment of STS securitisations under the SEC-IRBA*

Under the SEC-IRBA, the risk weight for position in an STS securitisation shall be calculated in accordance with Article 259, subject to the following modifications:

risk weight floor for senior securitisation positions = 10%

$$p = \max\left[0.3; 0.5 * \left(A + B * \left({}^{1}/_{N}\right) + C * K_{IRB} + D * LGD + E * M_{T}\right)\right]$$

### *Article 261. Calculation of risk-weighted exposure amounts under the External Ratings-Based Approach (SEC-ERBA)*

The risk weight under the SEC-ERBA approach shall be determined, respectively for short term and long term credit assessment, in accordance with tables 3-3 and 3-4 below.

| Credit Quality Step | Senior tranche Tranche maturity (MT) | | Non-senior (thin) tranche Tranche maturity (MT) | |
|---|---|---|---|---|
| | 1 year | 5 years | 1 year | 5 years |
| **1** | 15% | 20% | 15% | 70% |
| **2** | 15% | 30% | 15% | 90% |
| **3** | 25% | 40% | 30% | 120% |
| **4** | 30% | 45% | 40% | 140% |
| **5** | 40% | 50% | 60% | 160% |
| **6** | 50% | 65% | 80% | 180% |
| **7** | 60% | 70% | 120% | 210% |
| **8** | 75% | 90% | 170% | 260% |
| **9** | 90% | 105% | 220% | 310% |
| **10** | 120% | 140% | 330% | 420% |
| **11** | 140% | 160% | 470% | 580% |
| **12** | 160% | 180% | 620% | 760% |
| **13** | 200% | 225% | 750% | 860% |
| **14** | 250% | 280% | 900% | 950% |
| **15** | 310% | 340% | 1050% | 1050% |
| **16** | 380% | 420% | 1130% | 1130% |
| **17** | 460% | 505% | 1250% | 1250% |
| **All other** | 1250% | 1250% | 1250% | 1250% |

**Table 3-4: Long term credit assessment risk weights**

| Credit Quality Step | 1 | 2 | 3 | All other ratings |
|---|---|---|---|---|
| **Risk weight** | 15% | 50% | 100% | 1250% |

**Table 3-5: Short term credit assessment risk weights**

### *Article 262. Treatment of STS securitisations under SEC-ERBA*

Under the SEC-ERBA, the risk weight for a position in an STS securitisation shall be calculated in accordance with Article 261, but subject to preferential risk weights.

### *Article 263. Calculation of risk-weighted exposure amounts under the Standardised Approach (SEC-SA)*

The calculation of risk-weighted exposure amounts under the Standardised Approach is similar to the calculation of risk-weighted exposure amounts under the SEC-IRBA, but, in this case, the applicable risk weight will be determined as follows:

RW = 1250% when $D \leq K_A$

$RW = 12.5 * K_{SSFA(KA)}$ when $A \geq K_A$

$RW = \left[\left(\frac{K_A - A}{D - A}\right) * 12.5\right] + \left[\left(\frac{D - K_A}{D - A}\right) * 12.5 * K_{SSFA(K_A)}\right]$ when $A < K_A < D$

where:

D is the detachment point.

A is the attachment point.

$K_A$ is a parameter which shall be calculated as follows

$$K_A = (1 - W) * K_{SA} + W * 0.5$$

where:

$K_{SA}$ is the capital charge of the underlying pool defined as the product of the risk-weighted exposure amounts in respect of the underlying exposures as if they had not been securitised and 8%, the result divided by the value of the underlying exposures.

W = ratio of the sum of the nominal amount of underlying exposures in default to the nominal amount of all underlying exposures.

$$K_{SSFA(K_A)} = \frac{e^{a*u} - e^{a*l}}{a(u - l)}$$

where:

$$a = -\left(\frac{1}{(p * K_A)}\right)$$

$$u = D - K_A$$

$$l = \max(A - K_A; 0)$$

$p = 1$ for a securitisation exposure that is not a re-securitisation exposure

### *Article 264. Treatment of STS securitisations under SEC-SA*

Under the SEC-SA the risk weight for a position in an STS securitisation shall be calculated in accordance with Article 263, subject to the following modifications

risk weight floor for senior securitisation positions = 10%

$p = 0.5$

The "Subsection 4: Caps for Securitisation Positions" and "Subsection 5: Miscellaneous Provisions" contain some additional requirements which institutions involved in a securitisation transaction have to comply with.

In particular, under the so-called "look-trough" approach a securitisation position receives a maximum risk weight equal to the average RW applicable to the underlying exposures.[40]

So, institutions that use the SEC-IRBA for a securitisation position may apply a maximum capital requirement for that position equal to the capital requirement that would have been held against the underlying exposures under the IRB had they not been securitised.[41]

### *Article 270. Senior positions in SME securitisations*

The New Article 270 allows the application of the STS framework to synthetic securitisations when particular conditions are met:

- the position qualifies as the senior securitisation position;
- at least 80% of the securitisation underlying exposures can be qualified as SMEs as defined in Art 501[42] at the time of issuance of the securitisation;
- conditions for the credit risk transfer are recognised;
- the guarantor is the central government or the central bank of a Member State, a multilateral development bank or an international organisation, provided that the exposures to the guarantor or counter-guarantor qualify for a 0% risk weight.

This specific provision on SME securitisations, acknowledges the role of small and medium enterprises as backbone of the EU economy. It targets in particular those securitisations of SME loans where the credit risk related to the junior tranches is

[40] New Article 267, COM(2015) 473 final

[41] New Article 268, COM(2015) 473 final

[42] Look at Note 31

guaranteed by a restricted list of "zero risk-weight" third parties, given the relevance of these schemes in order to free capital to be used to increase lending to SMEs.

Although supporting the overall approach proposed in the New Article 270 by the European Commission, the EBA[43] aims to reconsider certain aspects of the mentioned proposal with respect to, in particular, (i) introducing the eligibility of fully cash-funded credit protection provided by private investors, and (ii) amending the criteria determining eligibility for qualifying regulatory capital treatment.

With regards to the first point, the global financial crisis has transformed the securitisation market environment; indeed, due to the scarcity of highly rated private investors, fully funded credit protection has come to prevail over unfunded credit protection. In particular, the last years have been characterised by 0% risk-weighted counterparties as almost exclusive providers of unfunded credit protection. But, the vast majority of the investor base is represented by hedge funds, pension funds, and other entities providing funded credit protection to originator institutions.

Fortunately, the European Parliament, in its Draft Report of 06/06/2016, acknowledging this point, propose to amend point e) of paragraph 1) of Article 270 as follows: "*the third party to which credit risk is transferred, and which may also act as guarantor or counter-guarantor, shall be one or more of the following: the central government or the central bank of a Member State, a multilateral development bank, an international organisation or a promotional entity or an institutional investor, provided that the exposures to the third party qualify for a 0% risk […] and that, in the case of an institutional investor, the guarantee or counter-guarantee is provided in the form of cash deposited with the originator institution."*[44]

Indeed, a funded credit protection can be structured according to various market practices. Among these, the highest credit protection which can be provided by the

[43] The EBA Report on Synthetic Securitisation, 2015

[44] Amendment 39, DRAFT REPORT on the proposal for a regulation of the European Parliament and of the Council amending Regulation (EU) No 575/2013 on prudential requirements for credit institutions and investment firms (COM(2015)0473 – C8-0289/2015 – 2015/0225(COD))

protection seller is the full cash funding where the cash collateral is deposited directly with the originator institution. It is the best solution by an originator viewpoint, since it is allowed to gain access to credit protection in a very timely fashion and without incurring any market/credit risk losses. Zero counterparty credit risk results in an outcome (for the originator) totally equivalent to the 0% risk weighting of special (public) counterparties.

Furthermore, fully funded credit protection in the form of cash does not present the risk of downgrade of these counterparties to which the originator is exposed in case of unfunded credit protection.

In addition, the eligibility criteria for certain synthetic securitisation positions in order to obtain the 'qualifying' regulatory treatment should maintain a high degree of consistency with the criteria for traditional securitisations. Consistency shall, on one side, ensure that synthetic securitisations achieve an overall level of quality that is comparable to the level required within the qualifying framework for traditional securitisations, mitigating the overall complexity and riskiness of the securitisation structure; on the other, avoid the possibility of credit institutions securitising in a synthetic format exposures that, due to specific features of riskiness, are not eligible for securitisation under the 'qualifying' traditional framework.

In order to comply with this objectives, the EBA proposal introduces synthetic securitisation-specific criteria aimed at:

- Ensuring that the differentiated regulatory treatment only targets balance sheet synthetic transactions, as opposed to arbitrage synthetic transactions;
- Ensuring that the originator institution can rely on credit protection immediately without facing any market, credit or counterparty credit risk on the funding arrangement, in the case of funded credit protection;
- Ensuring that the credit protection contract is structured to adequately protect the position of the originator.

A further opinion, the last in temporary terms, has been the European Central Bank opinion[45], which welcomes the regulatory framework simplification proposed by the EC, as this reduces inconsistencies and duplication.

The ECB argues that the success of the STS framework will depend substantially on the extent to which it is used by market participants. Therefore, it will be basic to avoid overly complex criteria, in order to do not hinder the investor's due diligence obligations.

The ECB considers most of the criteria to be sufficiently clear. However, several of them need to be further specified to ensure legal certainty and efficiency for those interpreting and applying them.

About the capital treatment for qualifying synthetic securitisations, the ECB steps back in comparison to the EBA proposal of amending the New Article 270; indeed, it expresses some concerns on the arguments for reducing capital charges for certain synthetic securitisations, considering them not as strong as the arguments outlined for traditional STS securitisations. In particular, what worries the ECB is the currently limited data available on both the volume and performance of synthetic securitisations due to their private nature, so sharing the cautious approach taken by the Commission, whereby the preferential treatment is strictly limited to a subset of synthetic securitisation structures.

In conclusion, there still are several doubts regarding the inclusion of synthetic securitisation in the new STS framework, but what is already clear is the disadvantaging result of the capital requirements which institution involved in this type of transaction will have to comply with.

The following chapter will be about an impact assessment of the new framework on the regulatory capital requirements which banks have to comply with.

[45] OPINION OF THE EUROPEAN CENTRAL BANK of 11 March 2016 on (a) a proposal for a regulation laying down common rules on securitisation and creating a European framework for simple, transparent and standardised securitisation and (b) a proposal for a regulation amending Regulation (EU) No 575/2013 on prudential requirements for credit institutions and investment firms

# 4 Impact Assessment

The relevance of synthetic securitisations as an important channel for diversifying and allocating risk more efficiently within the EU financial system, has been widely recognised by the main supranational authorities both at a European and at international level.

As already broadly illustrated, the amendment proposal of the European Commission to the CRR focuses on a better differentiation and on the development of simple, transparent and standardised framework for securitisations, supporting both EU investment and proper risk management. Among the main goals of this proposal, there is the willing to restart the securitisation market on a more sustainable basis, allowing for efficient and effective risk transfers to a broad set of institutional investors as well as banks.

Nevertheless, the new regulatory framework for securitisations, by means of the strengthening of capital standards, if, on one side, aims at fostering the confidence of the investors in this type of structured products, on the other side it could make the latter less effective as a capital optimisation tool.

Indeed, the main advantage which banks obtain by means of the origination of synthetic securitisation transactions, is the capital relief deriving from the credit risk transfer to a third party investor; a more conservative framework, that is a framework which sets higher capital requirements on the securitised tranches retained by the originator institution, as it is the one proposed by the European Commission, will reduce this benefit, affecting the difference between the risk weighted assets of the credit portfolio before and after the synthetic securitisation transaction.

Obviously, a soundest capital market is basic in order to protect investors and manage systemic risk, but the economic interest of the involved actors is as well as important in order to lead to success the European Commission project.

The following analysis will give evidence of the impact of the amended framework on the calculation of the risk weight of the securitised tranches, comparing the new approaches with the current Supervisory Formula Method.

In particular, there will be illustrated two different but related simulations:

(1) the consequences of an RW transaction from an originator's perspective, who retains a senior risk exposure only, **at different credit enhancement levels**;

(2) the consequences of an RW transaction from an originator's perspective **on a specific exemplificative credit portfolio over its life**.

## 4.1 Impact by Credit Enhancement Level

The following example is calibrated to a synthetic securitisation of a homogeneously-sized granular portfolio of credit exposures.

### 4.1.1 Key Assumptions

In the proposed transaction the originator sells the first loss risk and retains the senior risk on a given attachment level; the attachment level varies in order to allow the analysis of the capital implications for the senior tranche according to both the *"As is"* regulatory framework, namely the current Supervisory Formula Approach, and the new formulas under the Securitisation Internal Ratings-Based Approach (SEC-IRBA) and the Securitisation Standardised Approach (SEC-SA).

Furthermore, for better visualisation, in the first part of the analysis there will be depicted two different representations of the evolution of the senior tranche risk weight:

(i) a representation of the risk weight of the senior tranche by attachment, and

(ii) a representation of the marginal risk weight for each 1% increase in the attachment level.

***Securitised Pool***

| | |
|---|---|
| ***STS*** | *TRUE* |
| ***KIRB*** | *8.16%* |
| ***Pool PD Average*** | *2.00%* |
| ***Pool LGD Average*** | *35%* |
| ***N*** | *300* |
| ***MT*** | *5y* |
| ***W*** | *PD* |

**Table 4-1: Credit features of the underlying portfolio.**

The underlying portfolio is composed by equally-sized names with the features detailed in Table 4-1 above.

A portfolio probability of default equal to 2% corresponds to a BB (Ba) average rating, so below the "investment grade"[46] level; this will be only a starting point for the analysis, since there will be investigated both riskier portfolios and less risky ones.

In order to simplify the analysis and in order to make more comparable the circumstances of an institution either under the SEC-IRBA or under the SEC-SA approach, the delinquency rate "W" will be set equal to the probability of default estimate.

In the end, the portfolio is supposed to be compliant with the criteria of simplicity, transparency and standardisation defined by the Capital Requirements Regulation.

### 4.1.2 Analysis

The main novelties introduced by the CRR amendment proposal are about:

(i) the RW floor, since the risk weight on the new approaches is floored at 15% vs. 7% under the current SFA and 20% under the current standardised approach;

(ii) the insertion of a maturity parameter, which will increase the capital requirement for tranches with longer life under the new SEC-IRBA approach, and

(iii) the insertion of the so called "p-parameter".

The graphs which will be illustrated below, assume the securitised pool described in the table above, and represent the risk weight and the marginal risk weight of the senior tranche by attachment point.

[46] *Investopedia*: "An investment grade is a rating that indicates that a municipal or corporate bond has a relatively low risk of default. Bond rating firms, such as Standard & Poor's, use different designations consisting of upper- and lower-case letters 'A' and 'B' to identify a bond's credit quality rating. 'AAA' and 'AA' (high credit quality) and 'A' and 'BBB' (medium credit quality) are considered investment grade. Credit ratings for bonds below these designations ('BB', 'B', 'CCC', etc.) are considered low credit quality, and are commonly referred to as "junk bonds"."


**Figure 4-1: Risk Weight of Senior Tranches by attachment%, 5y [(1)]**

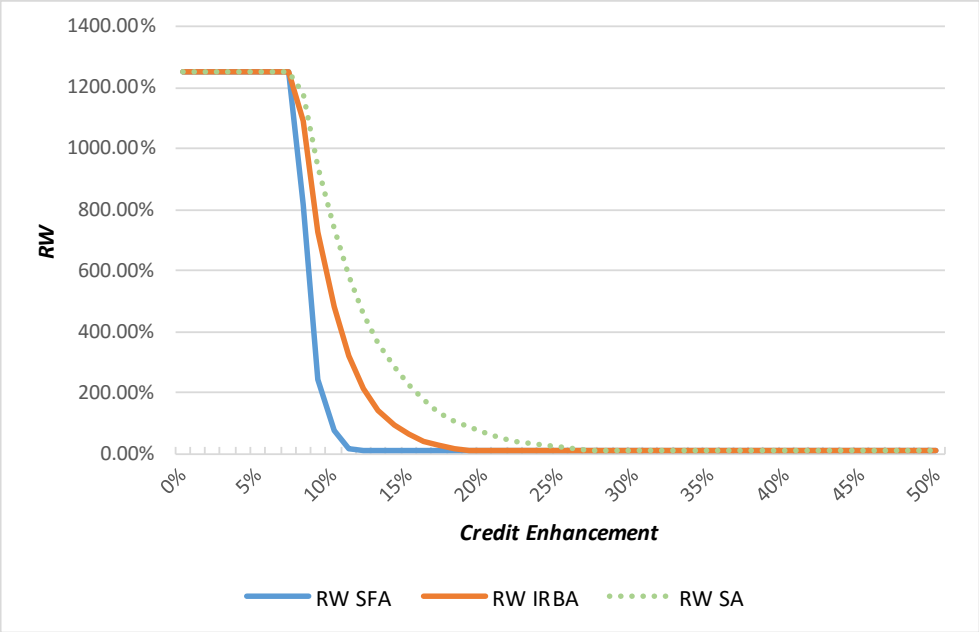


**Figure 4-2: Marginal Risk Weight by attachment%, 5y [(1)]**

[(1)] SEC-IRBA parameters: 300 names, equal size, PD = 2.00%, LGD = 35%, M = 5.0y, Legal maturity of the securitisation 5 years, KIRB = 8.16%
SEC-SA: KSA = 7.46%, assuming 1 delinquency scenario in SA (W = PD estimate under SEC-IRBA)

The solid blue line depicts the risk weight under the current Supervisory Formula Approach, instead the orange solid line and the green dashed line depict the risk weight under the new SEC-IRBA and SEC-SA approaches, respectively.

Looking at the line charts, it proves immediately clear the willing of the European Commission to make the new approaches more conservative than the current SFA; this happens both at high credit enhancement levels, where it apparently derive from the increased RW floor, and at low credit enhancement levels; indeed, , in the extreme case of a senior tranche with a thickness of 100% (A = 0% and D = 100%), both the SEC-IRBA and the SEC-SA imply a higher RW than the current SFA, and this difference remains stable for all the possible attachment points.

The high RW of the senior tranches with attachment point near to zero is mainly due to the fact that below the $K_{IRB}$ level, 8.16% in this example, the regulation sets a risk weight of 1250%.; this implies that, larger is the portion of the tranche below $K_{IRB}$, larger will be the impact of the 1250% weight of the total risk weighted assets of the tranche itself.

For better visualisation is useful to look at the marginal risk weights in Figure 4-2; indeed, here it can be noticed that the marginal risk weight is equal to 1250% until the $K_{IRB}$ level, 8.16% in this example, and then it starts to decline toward zero. The marginal risk weight will be equal to zero starting from the lower attachment point with minimum risk weight, since by this point the risk weight of the senior tranche will remain constant.

### *Maturity ($M_T$)*

As specified at the beginning of this paragraph, the maturity parameter is one of the new input variables inserted by the regulator in the capital requirements calculation under the new approaches. So, it is interesting to look at the elasticity of the risk weight of the securitised tranche to the maturity parameter; this allows to understand how the latter influences the regulatory capital which the originator financial institution has to hold.

The example above assumes a portfolio with a value of the maturity parameter equal to 5y; the floor and the cap set by the CRR amendment proposal are, respectively, 1y and 5y; so, for the purpose of the analysis, the two case which will be considered for the

sensitivity analysis will be: $M_T$ = 1year, the minimum indicated by the regulation, and $M_T$ = 3years, an average value between the cap and the floor.

A comparison between the original case, $M_T$ = 5y, and the two examples illustrated in the line charts below, highlights as the maturity and the risk weight of the senior tranche move together. Indeed, the capital requirement increases with maturity in all the three approaches under analysis; this happens despite the fact that the current SFA does not actually consider the life of the underlying portfolio as an input parameter.

The reason why the line depicting the behaviour of the RW computed under the current Supervisory Formula Approach moves with the other two is that it indirectly considers maturity; indeed, $M_T$ is among the parameters contributing to the $K_{IRB}$ calculation.

$K_{IRB}$ is computed as the sum of expected loss (PD $*$ LGD) and unexpected loss (RW $*$ 8%) of the underlying portfolio. Maturity is one of the variables determining the RW of a portfolio of credit exposures.

So, why do the new approaches introduced by the CRR amendment proposal and the current SFA actually differ?

The $K_{IRB}$ parameter does not change with the attachment and detachment levels. So, in graphical terms, a longer maturity results in a parallel shift towards right of the solid blue line, representing the RW under the current SFA. The higher risk embedded in the transaction due to the longer life of the securitised pool, and consequently the longer life of the transaction itself, is only indirectly taken into consideration.

The new approaches aim at making the risk weighted assets calculation more sensitive to the maturity of the securitised tranche, directly considering $M_T$ as an input parameter of the Simplified Supervisory Formula. Having the regulatory capital requirements based on risk weighted assets, the idea behind the Basel framework is to require capital to be greater as the portfolio riskiness increases. Longer maturities make the investor exposed to the potential losses of the underlying portfolio for a longer period; therefore, as the maturity increases, the riskiness of the transactions does likewise.

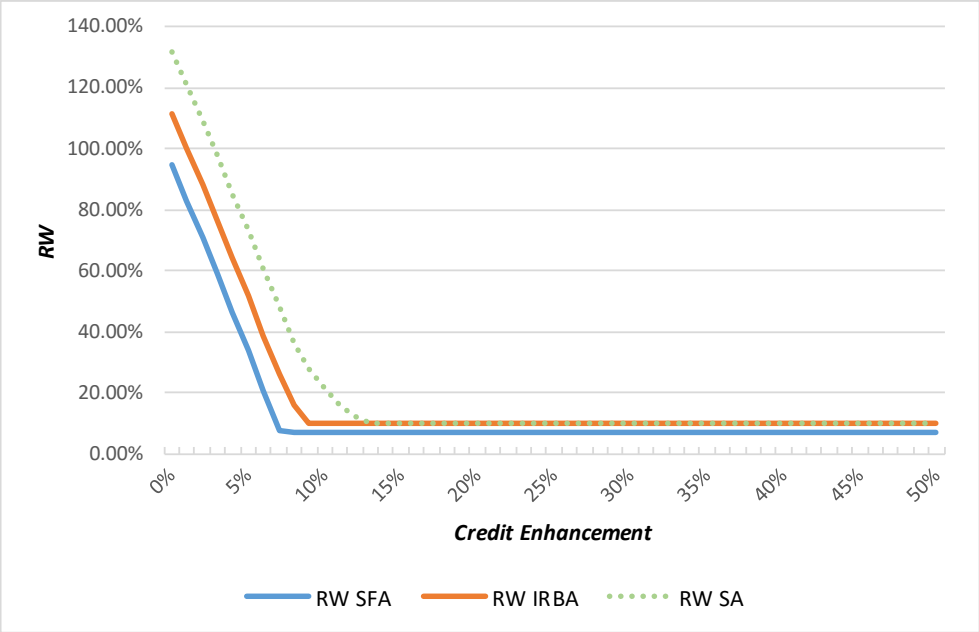


**Figure 4-3: Risk Weight of Senior Tranches by attachment%, 3y** [(2)]

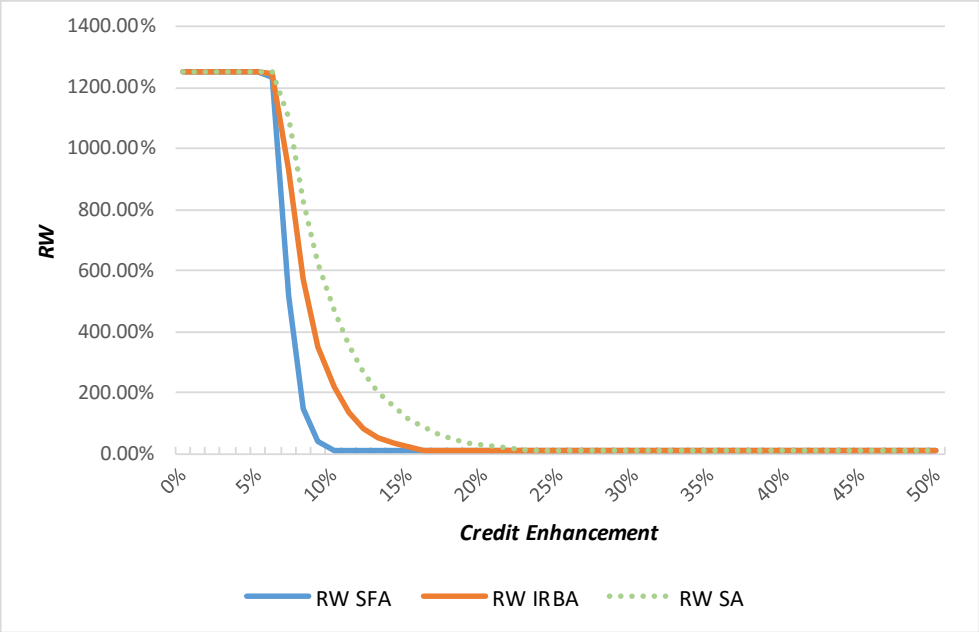


**Figure 4-4: Marginal Risk Weight by attachment%, 3y** [(2)]

[(2)] SEC-IRBA parameters: 300 names, equal size, PD = 2.00%, LGD = 35%, M = 3.0y, Legal maturity of the securitisation 3 years, KIRB = 6.86%
SEC-SA: KSA = 6.16%, assuming 1 delinquency scenario in SA (W = PD estimate under SEC-IRBA)

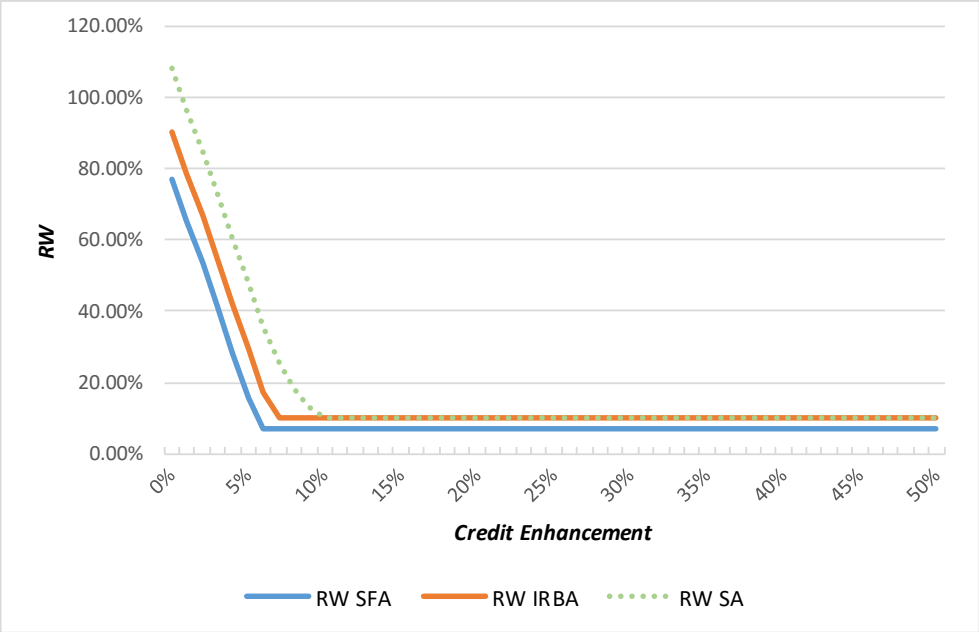


**Figure 4-5: Risk Weight of Senior Tranche by attachment%, 1y** [3]

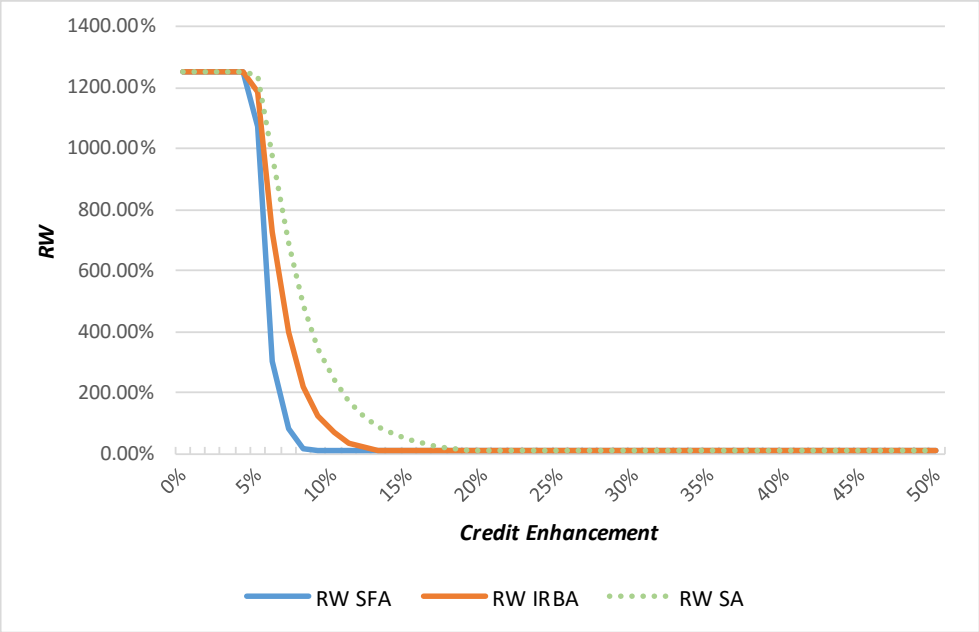


**Figure 4-6: Marginal Risk Weight by attachment%, 1y** [3]

[3] SEC-IRBA parameters: 300 names, equal size, PD = 2.00%, LGD = 35%, M = 1.0y, Legal maturity of the securitisation 1 years, KIRB = 5.57%
SEC-SA: KSA = 4.87%, assuming 1 delinquency scenario in SA (W = PD estimate under SEC-IRBA)

Under the current SFA there is a parallel increase of the risk weights of the senior tranche and so the marginal RW line remains almost fixed across maturities; instead, because of having $M_T$ as an input, under the new approaches the increase of the risk weight is more than proportional to the lengthening of the maturity.

One more time, the marginal risk weight is useful to appreciate the change produced by the new framework: as maturity increases, the difference between the risk weight calculated under the current SFA and the risk weight calculated under the new approaches actually widens, making clear how much more conservative are the approaches proposed by the European Commission amending the CRR.

### *"p-parameter"*

The "p-parameter" is calculated as:

$$p = \max\left[0.3; \left(A + B * \left({}^{1}/_{N}\right) + C * K_{IRB} + D * LGD + E * M_T\right)\right]$$

or, alternatively as

$$p = \max\left[0.3; 0.5 * \left(A + B * \left({}^{1}/_{N}\right) + C * K_{IRB} + D * LGD + E * M_T\right)\right]$$

for STS criteria compliant portfolios.

It is the key parameter determining the capital requirements under the new approaches. Indeed, its calculation depends on the main variables and parameters describing all the characteristics of the securitised portfolio; in particular, on one side there are:

- N: the effective number of exposures in the pool of underlying exposure;
- $K_{IRB}$: the capital charge of the pool of underlying exposures;
- LGD: the exposure-weighted average loss-given-default of the pool of underlying exposures;
- $M_T$: the maturity of the tranche;

On the other side, there are five parameters (A, B, C, D, E), which assume different values depending on the following factors:

- Seniority of the tranche: it refers to the order in which losses will be born;
- Granularity: a portfolio is considered granular if the parameter N is greater than 25; N is not the actual number of exposures composing the portfolio, but it depends on

the number of obligors and the size of the exposures. It is an indicator of the concentration of the securitised pool;

- Type of exposures: retail or wholesale;
- STS compliance: in fact, the re-calibration for STS securitisations arises in:

(i) The lower floor for RW;

(ii) The different formula for the p-parameter calculation.[5051]

Among these four factors, the analysis will focus only on the impact of the type of the underlying exposures, and of the compliance with STS eligibility criteria.

The other two factors will be kept constant since (i) in the proposed transaction the originator sells the first loss risk and retains the senior risk on a given attachment level; and (ii) an analysis on a non-granular portfolio would require a greater focus on the individual exposures, making less significant the application of a general approach.

**Retail Exposures.**

In the securitisation framework of the CRR, retail exposures do not actually have a different treatment; in fact, they could only benefit from some simplification in the calculation of the parameters contributing to the RW of the tranche. This implies that the RW of the senior tranche for wholesale and retail exposures remains almost unchanged.

Instead, in the new approaches, SEC-IRBA and SEC-SA, it is given a greater importance to the type of exposures composing the portfolio which has been securitised.

The line charts above allow to better visualise this change in the treatment of the retail exposures, as detailed below:

- The solid blue line remains almost unchanged, since, as anticipated, under the current SFA retail exposures allow originator financial institutions to use simplified formulas calculating the value of some parameters, but do not earmark for specific arrangements;

[50] Art. 260 COM(2015) 473 final

[51] Art. 264 COM(2015) 473 final

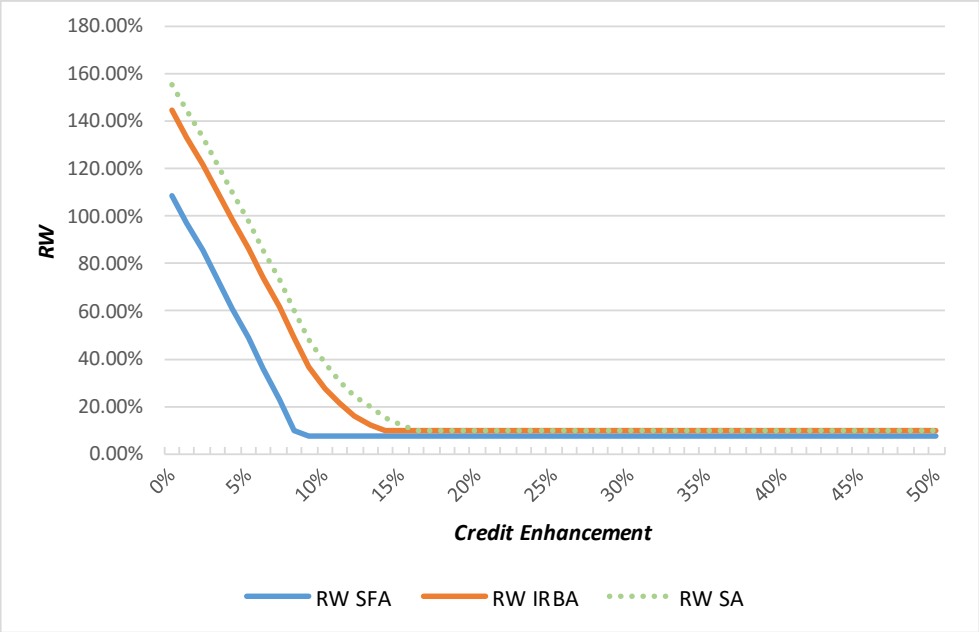


**Figure 4-7: Risk Weight of Senior Tranches by attachment%, Retail [4]**

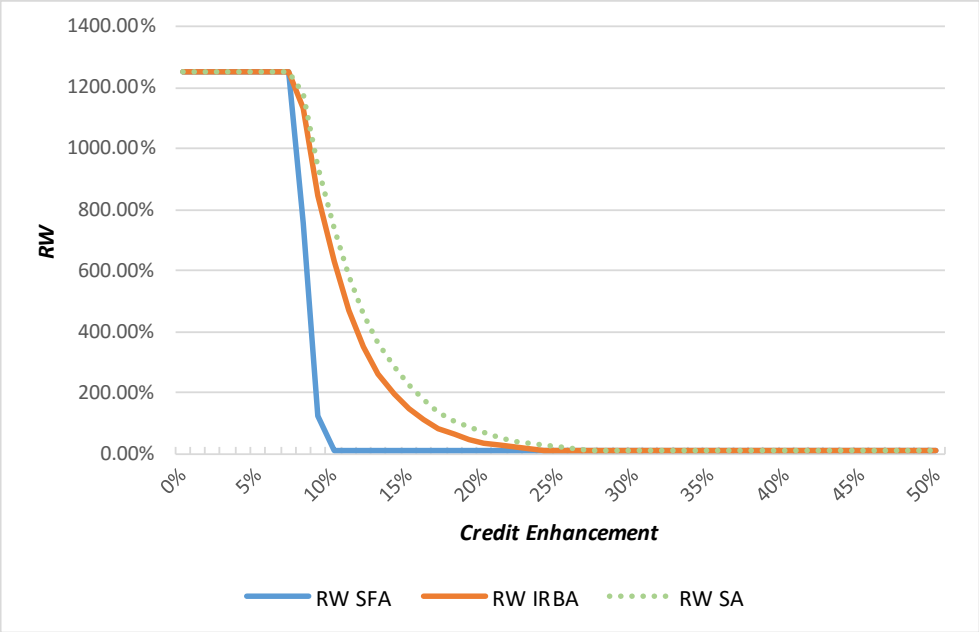


**Figure 4-8: Marginal Risk Weight by attachment, Retail [4]**

[4] SEC-IRBA parameters: 300 names, equal size, PD = 2.00%, LGD = 35%, M = 5.0y, Legal maturity of the securitisation 5 years, KIRB = 8.16%
SEC-SA: KSA = 7.46%, assuming 1 delinquency scenario in SA (W = PD estimate under SEC-IRBA)

- The dashed green line actually does not move at all, since the SEC-SA approach makes no distinction between wholesale and retail exposures;
- In this pretty unchanged fork, the solid orange line considerably moves towards right, showing the more conservative treatment reserved to retail exposures by the SEC-IRBA.

In Figure 4-8 too, it is clear how under the SEC-IRBA, the marginal risk weight by attachment level, decreases in a slower manner for retail exposures than wholesale exposures. This implies the need for a higher credit enhancement in order to achieve the minimum risk weight (10% in this example).

**Simple, Transparent and Standardised Transactions.**

All the scenarios detailed in the previous examples assume synthetic securitisation transactions which are compliant with the STS eligibility criteria outlined by the Securitisation Regulation. That is the high-quality securitisation framework which establishes lower risk weights for transactions which meet specific conditions about simplicity, transparency and comparability, in order to provide confidence to investors and a high standard securitisation market for the EU, and, furthermore, to help parties to evaluate the risks relating to synthetic transactions.

The willing of the European supranational authorities to enhance a recovery of financial markets in general, and of securitisation markets in particular, led to the building of an investor friendly framework; but, the other side of the market, originator institutions, has probably been neglected.

Indeed, the implemented analysis on the impact of a change in the securitisation framework highlighted how the latter would be penalising for those banks which originate synthetic securitisations in order to achieve a capital relief, and which consider these structured products as an alternative to raising capital by the issuance of new shares on the market.

Moreover, the impact assessment fulfilled above assumes Simple, Transparent and Standardised transactions; the new framework would be even more penalising for those transactions which does not meet the STS criteria.


**Figure 4-9: Risk Weight of Senior Tranches by attachment%, Wholesale** [5]

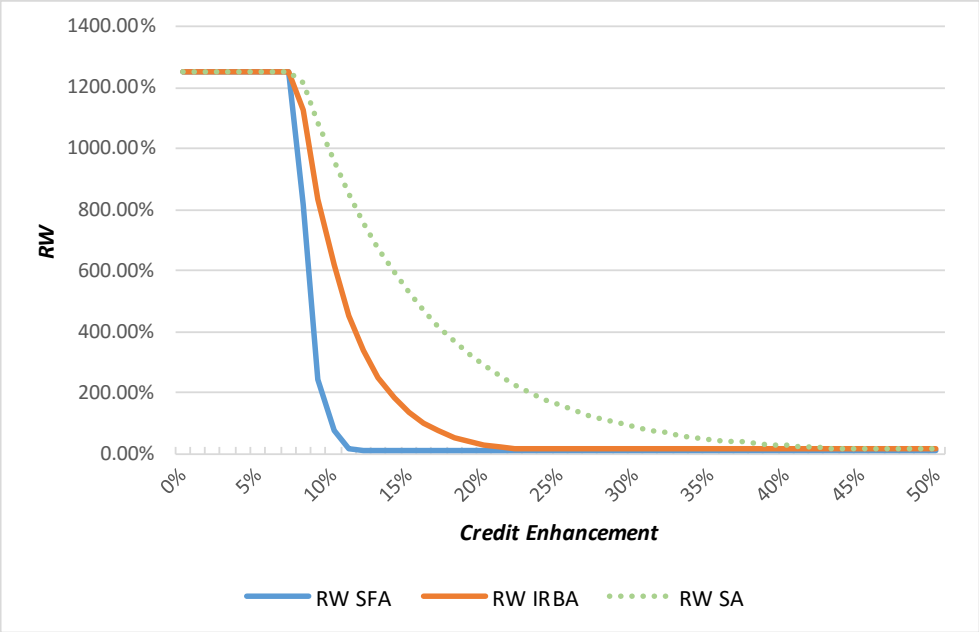


**Figure 4-10: Marginal Risk Weight by attachment%, Wholesale** [5]

[5] SEC-IRBA parameters: 300 names, equal size, PD = 2.00%, LGD = 35%, M = 5.0y, Legal maturity of the securitisation 5 years, KIRB = 8.16%
SEC-SA: KSA = 7.46%, assuming 1 delinquency scenario in SA (W = PD estimate under SEC-IRBA)


**Figure 4-11: Risk Weight of Senior Tranches by attachment%, Wholesale [(6)][54]**

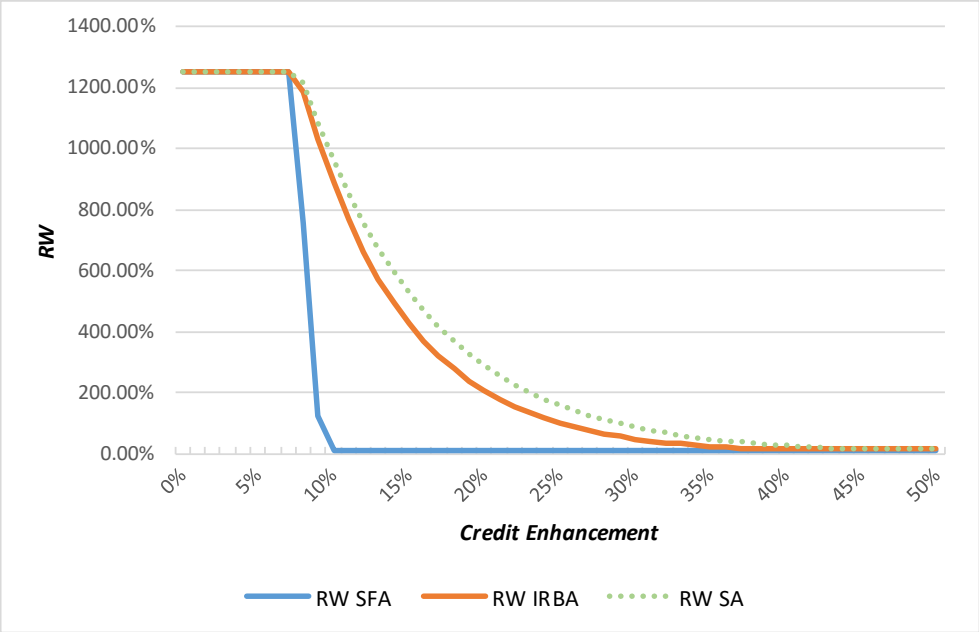


**Figure 4-12: Marginal Risk Weight by attachment%, Wholesale [(6)]**

[(6)] SEC-IRBA parameters: 300 names, equal size, PD = 2.00%, LGD = 35%, M = 5.0y, Legal maturity of the securitisation 5 years, KIRB = 8.16%
SEC-SA: KSA = 7.46%, assuming 1 delinquency scenario in SA (W = PD estimate under SEC-IRBA)

At the moment, not all the transactions outstanding in the securitisation market meet these eligibility criteria; their risk weights would be calculated under the new approaches without the "discount" on the RW floor and on the "p-parameter" reserved to STS transactions.

The amended framework shall be applied to securitisations issued on or after the date of application of the new regulation and to securitisations outstanding as of that date. However, for legal certainty purposes and to mitigate transitional costs as much as possible, institutions should be allowed to grandfather all outstanding securitisation positions that they hold on that date. Where an institution will make use of this option, outstanding securitisations should continue to be subject to the regulatory capital requirements set out in Regulation (EU) No 575/2013 in the version that applied prior to the date of application of the CRR amendment proposal.

In any case, future transactions not compliant with STS eligibility criteria will require the originator institution to hold more capital than equivalent STS compliant transactions, namely securitisations which are equivalent in terms of credit quality of the underlying portfolio, but which does not meet the STS eligibility criteria.

Figures 4-9 to 4-12 depict the impact on the RW of senior tranches by attachment point in case of a securitised portfolio which is not compliant with the STS eligibility criteria, and which is characterized by the credit features detailed at the beginning of this analysis.

***Securitised Pool***

| | |
|---|---|
| ***STS*** | *FALSE* |
| ***KIRB*** | *8.16%* |
| ***Pool PD Average*** | *2.00%* |
| ***Pool LGD Average*** | *35%* |
| ***N*** | *300* |
| ***MT*** | *5y* |
| ***W*** | *PD* |

**Table 4-2: Credit features of the underlying portfolio**

Furthermore, there will be considered the two following scenarios:

- A portfolio of wholesale exposures, and
- A portfolio of retail exposures.

The remarkable increase of the RW of the senior tranches by attachment point is evident looking at both the graphs depicting the risk weight of senior tranches and the graphs on marginal risk weights.

The attachment level required in order to achieve the minimum risk weight is higher than in the STS case, and, in addition, the floor is increased to 15%.

The larger numbers which can be observed under these two scenarios allow to better appreciate the jumps towards right made by the RW of senior tranches under the SEC-IRBA.

All these evidences make difficult to imagine the real possibility to observe non-STS transactions on underlying portfolios of retail exposures, since the RW relief would be largely reduced with respect to the current framework.

### *Probability of Default*

The probability of default is often considered as the variable which best summarizes the overall riskiness of the portfolio; this probably is an oversimplified view, but the default actually is the event after which the creditor would suffer a loss. So, it seems appropriate to look at PD in order to analyse the sensitivity of the RW of the senior tranche with respect to the riskiness of the securitised portfolio.

The probability of default assumed for the securitised pool in each of the previous scenarios has been of 2%; once again, the analysis will focus on two different scenarios:

(i) A securitised pool with an average PD of 0.05%, corresponding to an A rating, so at investment grade level, and

(ii) A securitised pool with an average PD of 5%, corresponding to a CCC rating, so quite close to default.

PD is a key input of the $K_{IRB}$ (or W under the Standardised Approach) calculation. The relation between $K_{IRB}$ and credit enhancement level is the basis of the definition of regulatory capital requirements; indeed, the Simplified Supervisory Formula, both under the Internal Rating-Based and the Standardised Approach, is a piecewise function depending on the level of $K_{IRB}$ with respect to the attachment and detachment levels.


**Figure 4-13: Risk Weight of Senior Tranches by attachment%, Wholesale** [7]

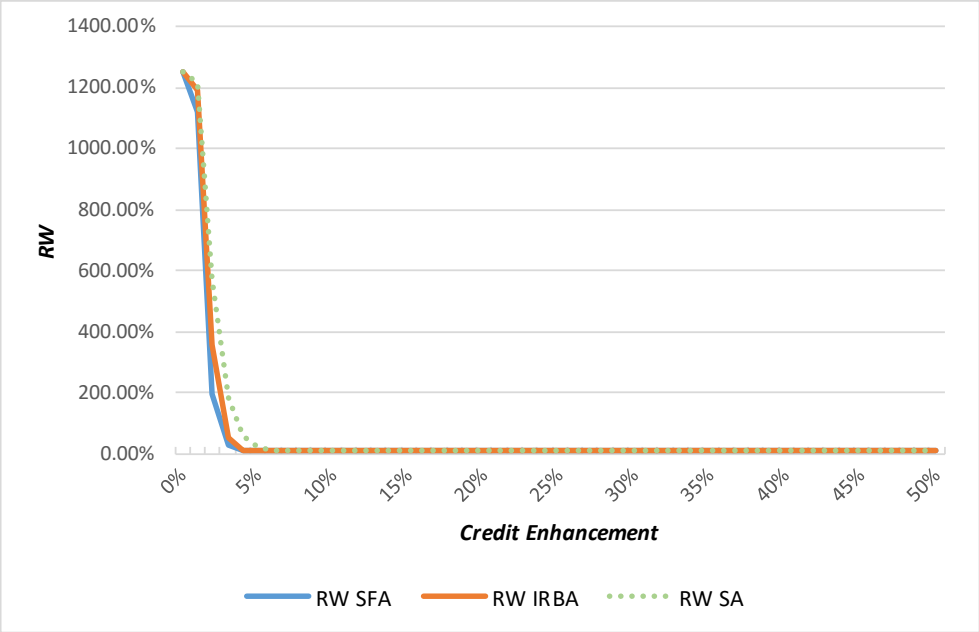


**Figure 4-14: Marginal Risk Weight by attachment%, Wholesale** [7]

[7] SEC-IRBA parameters: 300 names, equal size, PD = 0.05%, LGD = 35%, M = 5.0y, Legal maturity of the securitisation 5 years, KIRB = 1.76%
SEC-SA: KSA = 1.74%, assuming 1 delinquency scenario in SA (W = PD estimate under SEC-IRBA)


**Figure 4-15: Risk Weight of Senior Tranches by attachment%, Wholesale [8][56]**

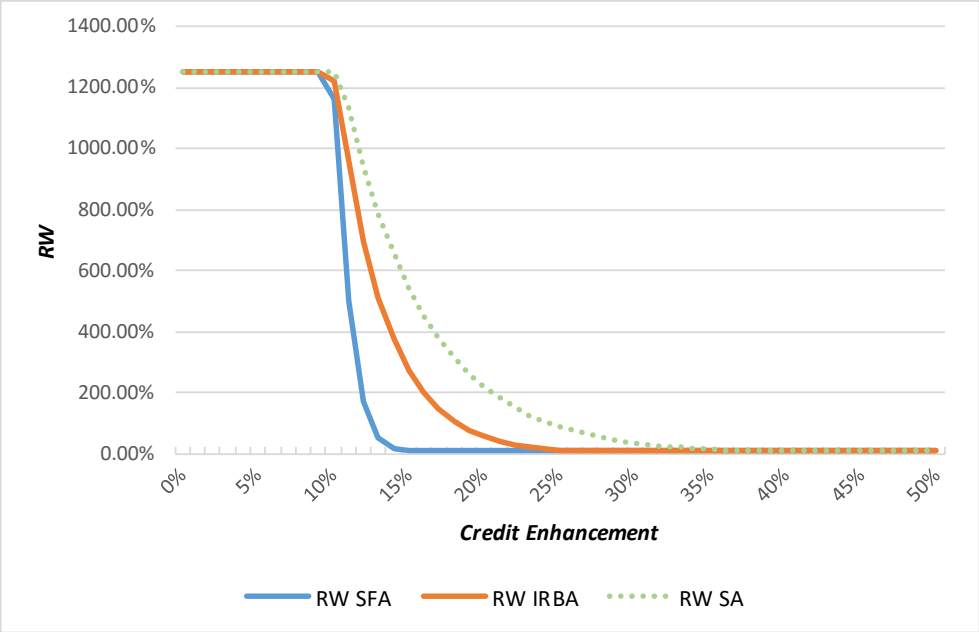


**Figure 4-16: Marginal Risk Weight by attachment%, Wholesale [8]**

[8] SEC-IRBA parameters: 300 names, equal size, PD = 0.05%, LGD = 35%, M = 5.0y, Legal maturity of the securitisation 5 years, KIRB = 10.63%
SEC-SA: KSA = 8.88%, assuming 1 delinquency scenario in SA (W = PD estimate under SEC-IRBA)

As already seen in the sensitivity analysis of the RW on a change of the maturity parameter, an increase in the riskiness of the portfolio, in this case represented by an increase in the average probability of the default of the securitised pool, will lead to a wider difference between the current framework and the new approaches.

The graphs are self-explaining, at very low PD values the three approaches move approximately together; but, more the PD increases, more the divergence between the current and the amended framework is evident; once again it is confirmed the willing of the regulator to improve the current SFA by making the capital requirements more sensitive to the riskiness of the securitised portfolio.

## 4.2 Impact on a Specific Exemplificative Credit Portfolio

### *Inputs*

The second part of the analysis looks at the same subject, but from a different perspective.

Hereinafter the focus will be on a single portfolio, characterized by the credit measures detailed below, analysing the impact of the new approaches over the entire life of the transaction instead of having a view at a given point in time.

Please consider that, despite this is a theoretical exercise, these parameters refer to a realistic pool which has been defined based on the experience on similar transactions had thanks to the period as an intern at UniCredit.

In case of simulations on a pool including retail exposures, the hypothesis is that such type of exposures has no impact on the overall risk features of the pool. The presence of this component only affects the calculation of the p-parameter, following what stated in Art. 259 (2) of the CRR amendment proposal.

In the proposed transaction the originator sells the first loss risk and a mezzanine risk, retaining the senior risk on the underlying credit portfolio. Both the junior and the mezzanine tranche of the portfolio are hedged at 100%; so, since the originator is required to hold an economic interest in the securitised portfolio in order to avoid or at least limit

the re-occurrence of the "Originate-to-Distribute Model", the portfolio under analysis is the already securitised portfolio.

| ***Securitised Pool*** | |
|---|---|
| ***Size*** | *1,000,000* |
| ***KIRB*** | *4.70%* |
| ***Pool PD Average*** | *1.40%* |
| ***Pool LGD Average*** | *30%* |
| ***Pool RW Average*** | *53.50%* |
| ***N*** | *1350* |
| ***MT*** | *5y* |

**Table 4-3: Credit features of the underlying portfolio**

The size of the tranches is detailed in the following table:

| ***Portfolio Tranching*** | |
|---|---|
| ***Junior Tranche*** | *0-4.5%* |
| ***Mezzanine Tranche*** | *4.5-6%* |
| ***Senior Tranche*** | *6-100%* |
| ***Hedging*** | *Junior & Mezzanine 100%* |

**Table 4-4: Size & Hedging of the securitised tranches**

In this example it will be illustrated not only the RW absorption of the credit portfolio before and after the transaction, but the cost born by the originator in order to buy the credit protection too; the assumptions on the investor profitability target and on the coupon paid by the originator institution are detailed in the table below:

| ***Junior Investor Profitability Target*** | |
|---|---|
| ***Target IRR of the Investor*** | *6.65%* |
| ***Junior Coupon*** | *12.50%* |

**Table 4-5: IRR & Coupon**

## *Outputs*

The outputs of this implemented impact analysis are:

- *RWA Absorption of the Senior Tranche* = RW Senior tranche % × Senior tranche nominal amount

- *Coupon on the Junior Tranche* = Junior Coupon % × Junior Tranche nominal amount

### *Scenarios*

The evolution of the risk weight of the senior tranche of the securitised portfolio will be calculated under five different scenarios:

(1) ***As Is:*** outputs are computed on the basis of the characteristics of the portfolio/portfolio tranching stated above, applying for the calculation of the Senior tranche RW the Supervisory Formula as per Regulation (EU) N° 575/2013 Art. 262;

(2) ***New STS:*** outputs are computed on the basis of the characteristics of the portfolio/portfolio tranching stated above, applying for the calculation of the Senior tranche RW the Simplified Supervisory Formula as per Art. 259 (Wholesale Senior Granular A/B/C/D/E parameters for p calculation) and Art. 260 of the Proposal for amendment of Regulation (EU) N° 575/2013;

(3) ***New STS (Retail):*** similar to scenario (2) but the p-parameter has been computed considering that the securitized pool is Retail;

(4) ***New w.o. STS:*** outputs are computed on the basis of the characteristics of the portfolio/portfolio tranching stated above, applying for the calculation of the Senior tranche RW the Supervisory Formula as per Art. 259 (Wholesale Senior Granular A/B/C/D/E parameters for p calculation) of the Proposal for amendment of Regulation (EU) N° 575/2013;

(5) ***New w.o. STS (Retail):*** similar to scenario (4) but p has been computed considering that 70% of the securitized pool is Wholesale and the remaining 30% is Retail, therefore applying weighted average calculation as per Art. 259 (2).

### *Outcome of the simulation*

The tables below sum up the outcome of the simulation analysis; in particular, they detail the values of the following quantities under each of the scenarios detailed above:

- *RWA ex ante:* the RWA absorption of the portfolio if it would not be securitised;

- *CPN:* the coupon, namely the amount paid by the originator institution buying credit protection to the investor;
- *RWA Absorption:* the risk weighted assets absorbed by the securitised portfolio; indeed, in this example the originator is required to hold capital only against the Senior Tranche amount, since the Junior and the Mezzanine Tranches are fully hedged;
- *RW Senior:* the RW of the Senior Tranche in percentage terms, computed as (Size of the Senior Tranche) / (*RWA Absorption*);
- *Freed RWA:* risk weighted assets freed by the securitisation transaction, computed as (*RWA ex ante*) / (*RWA Absorption*);
- *A:* attachment point;
- *Freed K:* regulatory capital requirement freed by the securitisation transaction, computed as (*Freed RWA*) × 8%;
- *Cost of freed K:* the coupon paid by the originator financial institution to the protection seller for each euro of freed regulatory capital requirement, computed as (*CPN*) / (*Freed K*);
- *Cost of freed RWA:* the coupon paid by the originator financial institution to the protection seller for each euro of freed RWA, computed as (*CPN*) / (*Freed RWA*).

The key output of the simulation is the *RW Senior*, since it illustrates, in accordance with the impact assessment by credit enhancement of the previous paragraph, how the new approaches are consistently more conservative than the current SFA, and furthermore probably excessively penalizing for non-STS transactions and portfolios composed of retail exposures.

Scenario (3) and Scenario (5) are extreme instances, since they assume a securitised pool exclusively composed of retail exposures; while this possibility is pretty rare, the objective of the implemented analysis is to highlight how this type of exposures is penalised by the proposed regulation. Actually, it is more common to have portfolios of both wholesale and retail exposures; when this occurrence is verified, a weighted average calculation as per Art. 259 (2) is applied.

***Scenario (1)***

| *As Is* | *1* | *2* | *3* | *4* | *5* | *6* |
|---|---|---|---|---|---|---|
| *RWA ex ante* | *510,831.1* | *413,114.8* | *300,103.5* | *187,462.2* | *107,289.1* | *65,721.9* |
| *CPN* | *6,250.0* | *6,107.3* | *5,577.8* | *5,141.0* | *4,832.6* | *4,656.5* |
| *RWA Absorption* | *62,442.1* | *47,018.1* | *32,969.8* | *19,485.5* | *10,029.9* | *5,139.2* |
| ***RW Senior*** | ***7.00%*** | ***7.00%*** | ***7.00%*** | ***7.00%*** | ***7.00%*** | ***7.00%*** |
| *Freed RWA* | *448,389.0* | *366,096.8* | *267,133.8* | *167,976.7* | *97,259.2* | *60,582.7* |
| *A* | *6.19%* | *7.52%* | *9.79%* | *14.88%* | *24.80%* | *38.72%* |
| *Freed K* | *35,871.1* | *29,287.7* | *21,370.7* | *13,438.1* | *7,780.7* | *4,846.6* |
| *Cost for freed K* | *17.42%* | *20.85%* | *26.10%* | *38.26%* | *62.11%* | *96.08%* |
| *Cost for freed RWA* | *1.39%* | *1.67%* | *2.09%* | *3.06%* | *4.97%* | *7.69%* |

**Table 4-6: Impact simulation for synthetic securitisation, Scenario (1)**

***Scenario (2)***

| *SSFA (STS)* | *1* | *2* | *3* | *4* | *5* | *6* |
|---|---|---|---|---|---|---|
| *RWA ex ante* | *510,831.1* | *413,114.8* | *300,103.5* | *187,462.2* | *107,289.1* | *65,721.9* |
| *CPN* | *6,250.0* | *6,107.3* | *5,577.8* | *5,141.0* | *4,832.6* | *4,656.5* |
| *RWA Absorption* | *89,203.0* | *67,168.7* | *47,099.7* | *27,836.5* | *14,328.5* | *7,341.8* |
| ***RW Senior*** | ***10.00%*** | ***10.00%*** | ***10.00%*** | ***10.00%*** | ***10.00%*** | ***10.00%*** |
| *Freed RWA* | *421,628.1* | *345,946.2* | *253,003.9* | *159,625.8* | *92,960.6* | *58,380.1* |
| *A* | *6.19%* | *7.52%* | *9.79%* | *14.88%* | *24.80%* | *38.72%* |
| *Freed K* | *33,730.2* | *27,675.7* | *20,240.3* | *12,770.1* | *7,436.8* | *4,670.4* |
| *Cost for freed K* | *18.53%* | *22.07%* | *27.56%* | *40.26%* | *64.98%* | *99.70%* |
| *Cost for freed RWA* | *1.48%* | *1.77%* | *2.20%* | *3.22%* | *5.20%* | *7.98%* |

**Table 4-7: Impact simulation for synthetic securitisation, Scenario (2)**

***Scenario (3)***

| *SSFA (STS,Retail)* | *1* | *2* | *3* | *4* | *5* | *6* |
|---|---|---|---|---|---|---|
| *RWA ex ante* | *510,831.1* | *413,114.8* | *300,103.5* | *187,462.2* | *107,289.1* | *65,721.9* |
| *CPN* | *6,250.0* | *6,107.3* | *5,577.8* | *5,141.0* | *4,832.6* | *4,656.5* |
| *RWA Absorption* | *165,089.9* | *93,559.6* | *47,099.7* | *27,836.5* | *14,328.5* | *7,341.8* |
| ***RW Senior*** | ***18.51%*** | ***13.93%*** | ***10.00%*** | ***10.00%*** | ***10.00%*** | ***10.00%*** |
| *Freed RWA* | *345,741.2* | *319,555.2* | *253,003.9* | *159,625.8* | *92,960.6* | *58,380.1* |
| *A* | *6.19%* | *7.52%* | *9.79%* | *14.88%* | *24.80%* | *38.72%* |
| *Freed K* | *27,659.3* | *25,564.4* | *20,240.3* | *12,770.1* | *7,436.8* | *4,670.4* |
| *Cost for freed K* | *22.60%* | *23.89%* | *27.56%* | *40.26%* | *64.98%* | *99.70%* |
| *Cost for freed RWA* | *1.81%* | *1.91%* | *2.20%* | *3.22%* | *5.20%* | *7.98%* |

**Table 4-8: Impact simulation for synthetic securitisation, Scenario (3)**

***Scenario (4)***

| SSFA | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| *RWA ex ante* | *510,831.1* | *413,114.8* | *300,103.5* | *187,462.2* | *107,289.1* | *65,721.9* |
| *CPN* | *6,250.0* | *6,107.3* | *5,577.8* | *5,141.0* | *4,832.6* | *4,656.5* |
| *RWA Absorption* | *133,804.5* | *100,753.0* | *70,649.5* | *41,754.7* | *21,492.7* | *11,012.7* |
| ***RW Senior*** | ***15.00%*** | ***15.00%*** | ***15.00%*** | ***15.00%*** | ***15.00%*** | ***15.00%*** |
| *Freed RWA* | *377,026.6* | *312,361.8* | *229,454.0* | *145,707.5* | *85,796.4* | *54,709.2* |
| *A* | *6.19%* | *7.52%* | *9.79%* | *14.88%* | *24.80%* | *38.72%* |
| *Freed K* | *30,162.1* | *24,988.9* | *18,356.3* | *11,656.6* | *6,863.7* | *4,376.7* |
| *Cost for freed K* | *20.72%* | *24.44%* | *30.39%* | *44.10%* | *70.41%* | *106.39%* |
| *Cost for freed RWA* | *1.66%* | *1.96%* | *2.43%* | *3.53%* | *5.63%* | *8.51%* |

**Table 4-9: Impact simulation for synthetic securitisation, Scenario (4)**

***Scenario (5)***

| SSFA (Retail) | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| *RWA ex ante* | *510,831.1* | *413,114.8* | *300,103.5* | *187,462.2* | *107,289.1* | *65,721.9* |
| *CPN* | *6,250.0* | *6,107.3* | *5,577.8* | *5,141.0* | *4,832.6* | *4,656.5* |
| *RWA Absorption* | *442,843.3* | *297,785.0* | *142,307.2* | *41,754.7* | *21,492.7* | *11,012.7* |
| ***RW Senior*** | ***49.64%*** | ***44.33%*** | ***30.21%*** | ***15.00%*** | ***15.00%*** | ***15.00%*** |
| *Freed RWA* | *67,987.8* | *115,329.9* | *157,796.4* | *145,707.5* | *85,796.4* | *54,709.2* |
| *A* | *6.19%* | *7.52%* | *9.79%* | *14.88%* | *24.80%* | *38.72%* |
| *Freed K* | *5,439.0* | *9,226.4* | *12,623.7* | *11,656.6* | *6,863.7* | *4,376.7* |
| *Cost for freed K* | *114.91%* | *66.19%* | *44.18%* | *44.10%* | *70.41%* | *106.39%* |
| *Cost for freed RWA* | *9.19%* | *5.30%* | *3.53%* | *3.53%* | *5.63%* | *8.51%* |

**Table 4-10: Impact simulation for synthetic securitisation, Scenario (5)**

The other penalizing element, identified by means of the simulation, is the compulsory compliance with the restrictive criteria of simplicity, transparency and standardisation; indeed, if the originator institution aims to be allowed to apply the more favourable capital requirements regulatory framework, it necessarily have to meet those strict standards.

The disadvantage in terms of effectiveness of synthetic securitisation transactions as a capital optimisation tool is reduced because of the increased risk weights calculated under the new approaches. This reduction becomes very large in case of non-STS transactions, and even more pronounced in case of non-STS transactions on portfolios of retail exposures.

With regards to the reduced effectiveness of synthetic transactions, the numbers in the tables above, shows that scenarios (2) and (4) are penalising both in terms of RWA

absorption, even though the securitised pools are good enough to obtain the minimum risk weight, and in terms of cost for freed capital (or cost for freed RWA). The latter is a consequence of the first impact, since augmenting the risk weighted assets absorption, the freed capital diminishes, making the whole transaction costlier.

The impact is obviously more pronounced for non-STS transactions, because of the higher floor, 15% instead of 10%.

But, it becomes even more evident in case of retail exposures, which at the same conditions in terms of credit enhancement and credit features of the portfolio, need some years to reach the floor level.

Scenario (5) shows as the combination of the two penalisations, retail exposures and non-STS transaction, causes a dramatically increase of the capital the originator institution is required to hold against its senior position in the synthetic securitisation, which almost surely makes this kind of transactions out-of-the-market, especially because of the excessive costs with respect to the capital relief obtained transferring the credit risk on the underlying portfolio to a third party investor.

The charts below will help to better visualising the numbers detailed above.

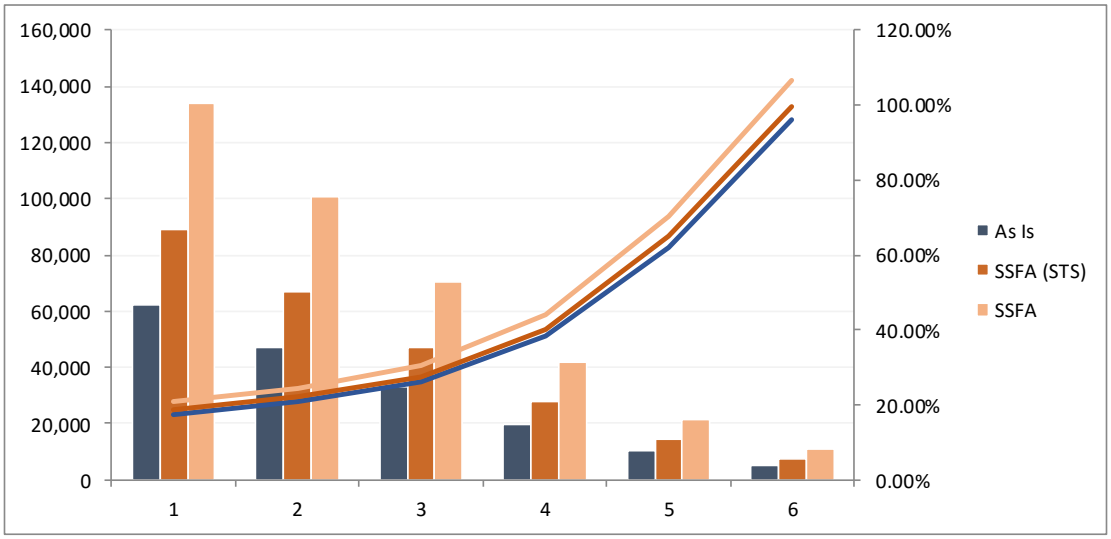


**Figure 4-17: Impact simulation for synthetic securitisation, Scenario (1) - (2) - (4)**

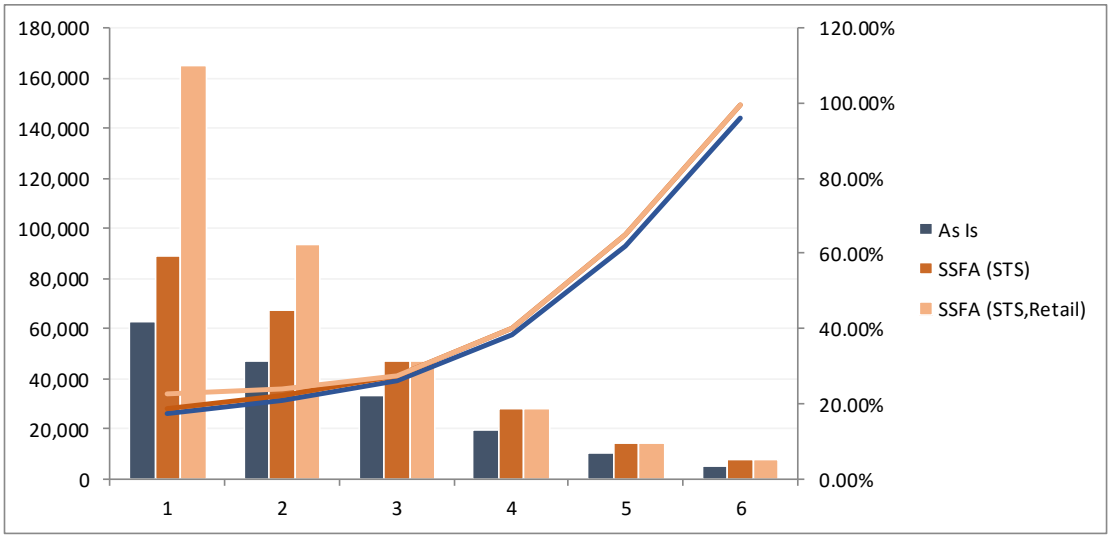


**Figure 4-18: Impact simulation for synthetic securitisation, Scenario (1) - (2) - (3)**

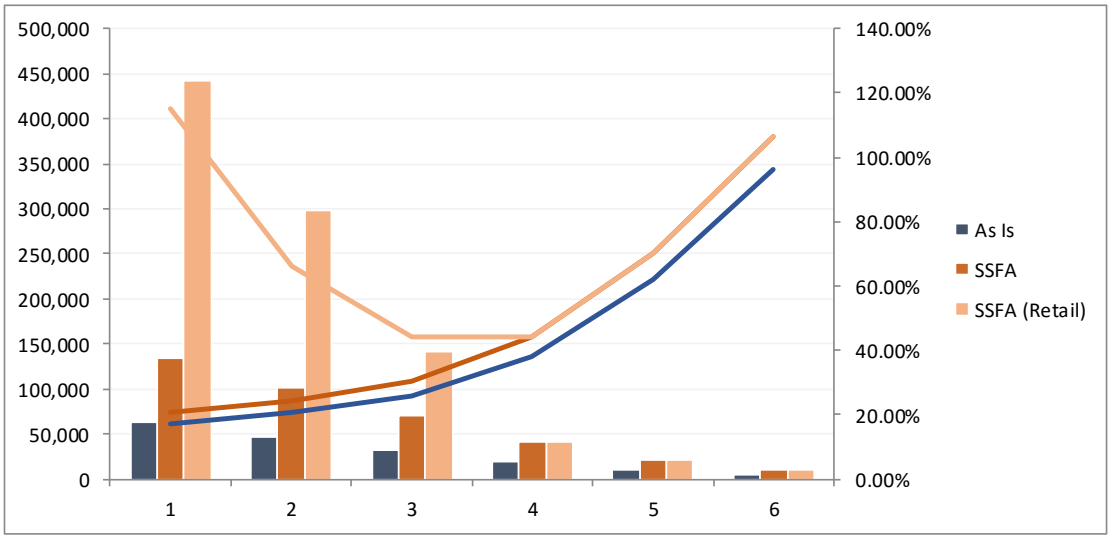


**Figure 4-19: Impact simulation for synthetic securitisation, Scenario (1) - (4) - (5)**

They combine the two output of the impact analysis:

(i) The bar charts illustrate the risk weight absorption of the senior tranche of the securitised portfolio at the end of each year over the life of the transaction, starting from the inception date to the clean-up call date, for each of the scenarios detailed in the caption;

(ii) The line charts illustrate the cost of freed capital for the same scenarios of the corresponding bar chart.

The graphs, evidently in accordance with the tables above, show as the divergence between the current SFA and the new approaches actually “explodes” for non-STS transactions of retail exposures.

In conclusion, in view of the huge penalization of non-STS, such a framework creates an excessive pressure for assets to be compliant with the STS eligibility criteria, especially for when retail exposures are included in the securitised pool.

In addition, despite of the strengthening of the capital requirements which banks have to hold when they originate securitisation transactions, the new framework does not completely face one of the issues identified as main causes of the global financial crisis in 2007 and earlier detailed in this thesis: *Structured Products Rating Model.*

As already highlighted, one of the weakness underlying how rating agencies used to assess risk to structured products, has been the reliance on probability of default, completely neglecting the loss incurred once the credit event actually verifies.

The amendment to the CRR proposes as a solution a new hierarchy of approaches under which the rating-based risk weights calculation is less dependent on the external rating agencies. Furthermore, it introduces the Loss Given Default among the inputs of the p-parameter.

This is only a partial solution, since the analysis puts in evidence the high reliance on the average PD of the securitised pool.

So, implementing a more conservative framework seems to be insufficient to face one of the main causes behind the implosion of the securitisation market, and on the other side too much penalising if it is considered that it is supposed to be an incentive to the securitisation market itself.

# 5 Conclusions

The purpose of this thesis has been to assess the impact of the amendments proposed by the European Commission, as a result of the regulatory development triggered by the global financial crisis started in 2007, which highlighted the several weaknesses of the Basel II regulatory framework.

In order to be able to do that, first, it has been illustrated an overview of both the current securitisation regulatory framework, and of the improvements that several supranational authorities are suggesting to introduce; later, it has been implemented an analysis of the impact of the proposed new rating-based approaches on the risk weighted assets calculated by the originator financial institutions.

The European Commission chose to introduce a revised regulatory framework on capital charges for exposures to securitisations, and to differentiate the treatment of STS securitisations having regard to the overall objectives of the Commission legislative package on securitisation, namely:

(i) Remove stigma attached to securitisations among investors;

(ii) Remove regulatory disadvantages for STS products, and

(iii)Reduce or eliminate unduly high operational costs for issuers and investors.

The implemented analysis compared the capital requirements calculated under the current Supervisory Formula Approach with the capital requirements calculated under the new Simplified Supervisory Formula Approaches (SEC-IRBA & SEC-SA).

In particular, the impact analysis has been illustrated by two different perspectives:

(i) the consequences of an RW transaction from an originator's perspective, who retains a senior risk exposure only, **at different credit enhancement levels**;

(ii) the consequences of an RW transaction from an originator's perspective **on a specific exemplificative credit portfolio over its life**.

The results of the simulation at different credit enhancement levels has been consistent with the simulation on a specific exemplificative credit portfolio.

Indeed, both the analysis highlighted the willing of the European Commission to strengthen the capital requirements for securitisation transactions in order to renew the investor's confidence in this type of structured products.

The most important evidences have been:

- the greater sensitivity of the supervisory formulas to the riskiness of the securitised portfolio, confirmed looking at both the average probability of default of the pool and at its maturity;
- the meaningfulness of the new parameters introduced by the amendment proposal, as for instance:
  (i) The maturity parameter, which directly takes into consideration the risk embedded in the length of the life of the underlying portfolio;
  (ii) The p-parameter, which combines several information of the pool.
- The high, and probably excessive, penalties for non-STS transactions and for portfolios of retail exposures.

The result of this more sensitive and more conservative framework is a lower efficiency of synthetic securitisation transactions as capital optimisation tools. In fact, higher risk weighted assets for equivalent portfolio in terms of risk imply a lower capital requirement relief; therefore, freeing capital by means of synthetics would be costlier and so less efficient with respect to the issuance of new capital on the primary market.

If the economic interest behind these transactions and their role as a capital optimisation tool would disappear, investors could get into a situation in which they are willing to buy products that originators are not inclined to sell anymore.

So, as it always happens when there are opposed interests, the best solution would probably be in the middle. The securitisation products need to win back the confidence of the market and this cannot disregard an amendment of the Securitisation Framework; but, this does not necessarily have to imply damaging originator institutions businesses.

Securitisation, should serve a more stable financial system through risk sharing. However, in practice, the securitisation market has been prone to the twin problems of asymmetric information and moral hazard and has been extremely unstable. In order to

solve these problems, there have to be put forward amendments to make securitisation market more reliable, even during times of crisis by:

- Making the market more transparent and by better aligning interest of market participants, for instance banning re-securitisations;
- To empower the supervisors, to prevent any threat to financial stability through the revival of the European securitisations market.

Probably, transparency, together with the alignment of the interests of market participants and the empowerment of supervisor would be more effective tools than deprive securitisations of their essence, in order to foster the recovery of this market so important for the European economy.

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# Summary

Nowadays, as a result of the global financial crisis, the two main hurdles to access to financing for businesses and individuals are (i) capital constraints, and (ii) the limits which banks place on various types of exposures under their risk management policies.

Securitisations, and particularly synthetic securitisations, could be an effective tool in overcoming these obstacles in order to revamp lending activity.

This thesis aims at illustrating the world of securitisations, especially focusing on synthetic securitisation, by means of an overview of their performance in recent years, their current regulation, the developing of their regulatory framework, and an analysis on the impact of the amendment proposals.

## What is a Synthetic Securitisation?

First of all, **securitisation** *"means a transaction or scheme, whereby the credit risk associated with an exposure or pool of exposures is tranched, having both of the following characteristics:*

*(a) payments in the transaction or scheme are dependent upon the performance of the exposure or pool of exposures;*

*(b) the subordination of tranches determines the distribution of losses during the ongoing life of the transaction or scheme".*

Further, two broad categories can be identified: the traditional securitisations (also called true-sale securitisations), and the synthetic securitisations.

A **traditional securitisation** is "*a securitisation involving the economic transfer of the exposures being securitised. This shall be accomplished by the transfer of ownership of the securitised exposures from the originator institution to an SSPE or through sub-participation by an SSPE. The securities issued do not represent payment obligations of the originator institution"*, but, under this structure, payments to the investors depend upon the performance of the specified underlying exposures, as opposed to being derived from an obligation of the entity originating those exposures.

Synthetic securitisation and traditional securitisation may not fundamentally differ in terms of the nature of the underlying assets, risk tranching and capital structures; effectively, in both cases, the underlying exposures are loans or other debt instruments, and the structure is composed by means of: (i) at least two different stratified risk positions or tranches that reflect different degrees of credit risk, and (ii) a so called "waterfall" capital structure, where the lower tranches are the first bearing losses.

Where they actually differ is the ways of transferring risk from the originator to the investor.

It is possible to primarily identify three benefits which the synthetic securitisations lead to originator banks:

- Hedging credit risk;
- Capital optimisation;
- Securitisation of difficult asset classes.

The "bible" when analysing securitisations is the Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending Regulation (EU) No 648/2012.

It states that institutions shall apply either the Standardised Approach or, if permitted by the competent authorities, the Internal Ratings Based Approach, to calculate their risk-weighted exposure amounts for the purpose of total risk exposure calculation needed to determine own funds requirements.

Under the **Standardised Approach** the application of risk weights shall be based on the exposure class to which the exposure is assigned and its credit quality. An external credit assessment may be used to determine the risk weight of an exposure under the Standardised Approach only if it has been issued by an External Credit Assessment Institution (ECAI) or has been endorsed by an ECAI; otherwise, the exposure will be considered unrated.

The capital charge is calculated as the product of the applicable risk weight provided for under the Standardised Approach and the 8% minimum capital requirement assuming a credit conversion factor of 100% (on balance sheet items).

Where the set out conditions are met, the competent authority shall permit institutions to calculate their risk-weighted exposure amounts using the **Internal Ratings Based Approach**, so using their own estimates of the credit risk measures required for the application of the formulas set out by regulation**.** The permission to the use the IRB Approach, shall be required for each exposure class and for each rating system and internal model approaches to equity exposures and for each approach to estimating LGDs and conversion factors used. So, the same bank is allowed to use both the explained approaches, the Standardised Approach and the IRB Approach, but, obviously, for different exposure classes.

An originator institution of a synthetic securitisation may calculate risk-weighted exposure amounts, and, as relevant, expected loss amounts, for the securitised exposures of the portfolio, if both significant credit risk is considered to have been transferred to third parties either through funded or unfunded credit protection, and the originator institution applies a 1250 % risk weight to all securitisation positions it holds in this securitisation or deducts these securitisation positions from Common Equity Tier 1 items.

Significant credit risk shall be considered to have been transferred where the originator institution is able to demonstrate, in every case of a securitisation, that the reduction of own funds requirements which it achieves by the securitisation is justified by a commensurate transfer of credit risk to third parties.

Under the IRB Approach, the calculation of risk weighted exposure amounts has to comply with the following hierarchy of methods:

(a) for a rated position or a position in respect of which an inferred rating may be used, the institution shall calculate the risk-weighted exposure amount by applying the relevant risk weight to the exposure value and multiplying the result by 1,06.

(b) for an unrated position the institution may use the Supervisory Formula Method;

(c) in all other cases, a risk weight of 1250 % shall be assigned to securitisation positions which are unrated;

Under the **Supervisory Formula Method**, the risk weight for a securitisation position shall be calculated as follows subject to a floor of 20 % for re-securitisation positions and 7 % for all other securitisation positions:

$$12.5 * \frac{\mathrm{S[L+T]} - \mathrm{S[L]}}{\mathrm{T}}$$

where:

$$S[x] = \begin{cases} x, & when\ x \leq K_{IRBR} \\ K_{IRBR} + K[x] - K[K_{IRBR}] + \left(1 - e^{\left(\frac{\omega * (K_{IRBR} - x)}{K_{IRBR}}\right)}\right) * \frac{d * K_{IRBR}}{\omega} & when\ x > K_{IRBR} \end{cases}$$

where:

$$\mathrm{h} = \left(1 - \frac{\mathrm{K_{IRBR}}}{\mathrm{ELGD}}\right)^{\mathrm{N}}$$

$$\mathrm{c} = \frac{\mathrm{K_{IRBR}}}{1-\mathrm{h}}$$

$$\mathrm{v} = \frac{(\mathrm{ELGD} - \mathrm{K_{IRBR}}) * \mathrm{K_{IRBR}} + 0.25 * (1 - \mathrm{ELGD}) * \mathrm{K_{IRBR}}}{\mathrm{N}}$$

$$\mathrm{f} = \left(\frac{\mathrm{v} + \mathrm{K_{IRBR}^2}}{1-\mathrm{h}} - \mathrm{c}^2\right) + \frac{(1 - \mathrm{K_{IRBR}}) * \mathrm{K_{IRBR}} - \mathrm{v}}{(1-\mathrm{h}) * \tau}$$

$$\mathrm{g} = \frac{(1-\mathrm{c}) * \mathrm{c}}{\mathrm{f}} - 1$$

$$\mathrm{a} = \mathrm{g} * \mathrm{c}$$

$$\mathrm{b} = \mathrm{g} * (1 - \mathrm{c})$$

$$\mathrm{d} = 1 - (1 - \mathrm{h}) * (1 - \mathrm{Beta}[\mathrm{K_{IRBR}}; \mathrm{a}. \mathrm{b}])$$

$$\mathrm{K[x]} = (1 - \mathrm{h}) * \big((1 - \mathrm{Beta[x; a, b]}) * \mathrm{x} + \mathrm{Beta[x; a + 1, b]} * \mathrm{c}\big)$$

$$\tau = 1000;$$

$$\omega = 20;$$

$\mathrm{Beta[x; a, b]}$ = cumulative beta distribution with parameters a and b evaluated at x;

T = the thickness of the tranche in which the position is held;

$\mathrm{K_{IRBR}}$ = the ratio of (a) $\mathrm{K_{IRB}}$ to (b) the sum of the exposure values of the exposures that have been securitised, and is expressed in decimal form;

L = the credit enhancement level;

N = the effective number of exposures calculated as

$$N = \frac{(\sum_i EAD_i)^2}{\sum_i EAD_i^2}$$

ELGD = the exposure-weighted average loss-given-default, calculated as follows

$$ELGD = \frac{\sum_i LGD_i * EAD_i}{\sum_i EAD_i}$$

where:

$LGD_i$ = the average LGD associated with all exposures to the $i^{th}$ obligor.

For securitisations in which materially all securitised exposures are retail exposures, institutions may, subject to permission by the competent authority, use the Supervisory Formula Method using the simplifications h=0 and v=0, provided that the effective number of exposures is not low and that the exposures are not highly concentrated.

Furthermore, capital requirements for credit risk on exposures to SMEs shall be multiplied by the factor 0.7619.

## How is the International Regulation Developing?

Term securitisation issuance declined markedly across jurisdictions from the onset of the financial crisis in 2007. Furthermore, the crisis highlighted several weaknesses in the Basel II securitisation framework, including concerns that it could generate insufficient capital for certain exposures.

The regulatory development produced a large amount of discussion papers and consultative documents in order to clarify which should actually be the improvements to the Basel II framework, the result of which, at a European level, has been the identification by the European Commission of two major steps: first, the development of a common substantive framework for securitisations for all participants in this market and identifying a subset of transactions meeting certain eligibility criteria: simple, transparent and standardised securitisations or STS securitisations. This is the subject of the Commission Proposal for a Securitisation Regulation. The second step is to amend the regulatory framework of securitisations in EU law, including in the area of capital charges for credit

institutions and investment firms originating, sponsoring or investing in these instruments, in order to provide for a more risk-sensitive regulatory treatment for STS securitisations.

Such differentiated regulatory treatment already existed in certain legislative instruments, (e.g. Liquidity Coverage Ratio), but, this needed to be complemented by an amendment to the regulatory capital treatment for securitisations in Regulation No. 575/2013 (the "CRR").

The concept of "simple, transparent and standardised" (STS) refers to the process by which the securitisation is structured and not the underlying credit quality of the assets involved. Furthermore, STS does not mean free of risks, but it means that the product respects a number of criteria and that a prudent and diligent investor will be able to analyse the risk involved.

**Simplicity.** Criteria on simplicity refers to the homogeneity of underlying assets with simple characteristics, and a transaction structure that is not overly complex.

**Transparency.** Criteria on transparency provide investors with sufficient information on the underlying assets, the structure and the parties involved in the transaction, thereby promoting a more comprehensive and thorough understanding of the risk involved.

**Standardisation.** Criteria on standardisation enable a more straightforward comparison across securitisation products within an asset class.

The CRR amendment proposal of the European Commission replaces the entire Chapter 5 of Title II, Part Three of CRR, but the most relevant changes are contained in Articles 245 to 270a.

New Articles 254 to 270bis contain a new hierarchy of approaches, introducing a risk weight floor of 15% for all securitisation exposures and for all the three approaches.

Furthermore, New Articles 260, 262, and 264 provide a more risk-sensitive prudential treatment for STS securitisations in line with the EBA report on qualifying securitisations proposal. All the 3 approaches are re-calibrated in order to generate lower capital requirements for positions in STS transactions, and, in addition, senior positions in STS securitisations will also benefit from a lower floor of 10%.

The Section 3 (Subsection 3: Methods to Calculate Risk-Weighted Exposure Amounts) contains the methods, set out by the Regulation, the institutions shall use to calculate risk-weighted exposure amounts in relation to all positions they hold in a securitisation.

Besides the concerns about the possibility that the Basel II framework could generate insufficient capital for certain exposures, the global credit crisis started in 2007 caused the rating agencies to be criticised.

Investors were prepared to buy products assessed with an AAA (Aaa) rating by rating agencies. Especially in case of true sale securitisations, these products had complex interdependent structures, but, in many instances, investors' reliance on ratings was so great that they did no analysis of their own. In the fall of 2007, many structured products were downgraded, which contributed to a panic in the market.

Rating agencies have different approaches in rating structured products; the criterion used by S&P and Fitch aims to ensure that the probability of a loss on a structured product with a certain rating is similar to the probability of a loss on a corporate bond with the same rating. Instead, the criterion used by Moody's focuses on the expected loss of the structured product.

The literature never identified the choice between expected loss and probability of default as rating criterion for bonds an important issue. This could be considered reasonable since bond ratings are heavily dependent on judgment. However, the criterion used is crucial in the rating of structured products, which credit assessment is mainly model-based.

Looking exclusively at PD the credit quality assessment only consider how likely is a default event, but it completely neglects the loss that will occur if a default actually verifies. Instead, the EL considers both the probability of incurring in a loss (PD) and the loss that would be born in case of a default (LGD).

Paradoxically, this point has not been the main focus of the discussion on the improvement of the Basel II framework, and the European Commission amendment proposal face it only marginally.

## Impact Assessment

The new regulatory framework for securitisations, by means of the strengthening of capital standards, if, on one side, aims at fostering the confidence of the investors in this type of structured products, on the other side could make it less effective as a capital optimisation tool.

The implemented analysis objective is to give evidence of the impact of the amended framework on the calculation of the risk weight of the securitised tranches.

In particular, it is composed of two different but related parts:

(1) the consequences of an RW transaction from an originator's perspective, who retains a senior risk exposure only, **at different credit enhancement levels**.

The underlying portfolio is composed by equally-sized wholesale exposures with the following features:

***Securitised Pool***

| | |
|---|---|
| ***STS*** | *TRUE* |
| ***KIRB*** | *8.16%* |
| ***Pool PD Average*** | *2.00%* |
| ***Pool LGD Average*** | *35%* |
| ***N*** | *300* |
| ***MT*** | *5y* |
| ***W*** | *PD* |

The main novelties introduced by the CRR amendment proposal are about (i) the RW floor, since the minimum risk weight on the new approaches is floored at 15% vs. 7% under the current SFA and 20% under the current standardised approach, (ii) the insertion of a maturity parameter, which will increase the capital requirement for tranches with longer life under the new SEC-IRBA approach, and (iii) the insertion of the so called "p-parameter".

The solid blue line depicts the risk weight under the current Supervisory Formula Approach, instead the orange solid line and the green dashed line depict the risk weight under the new SEC-IRBA and SEC-SA approaches, respectively.

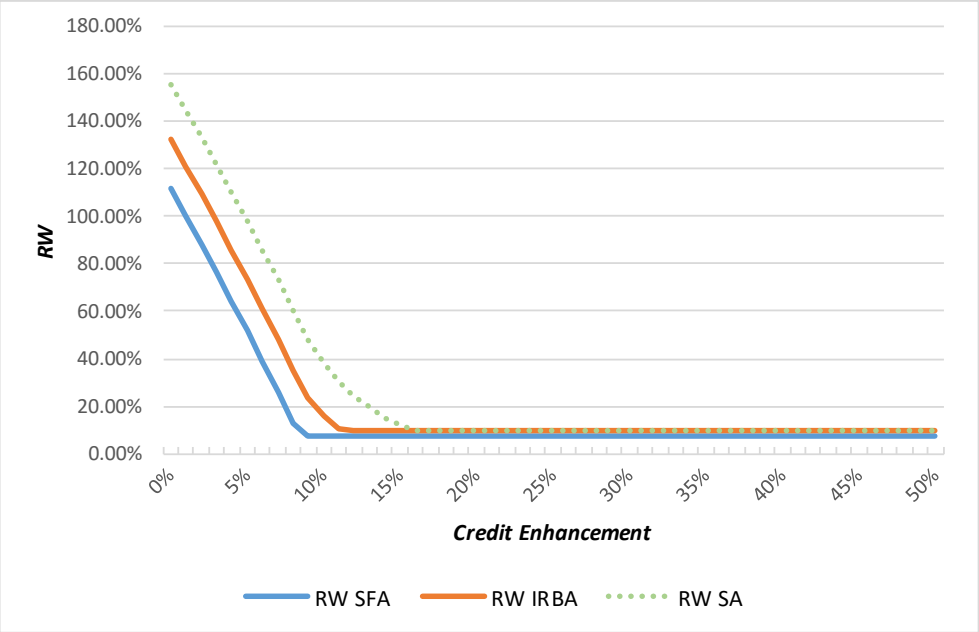


**Figure S-1: Risk Weight of Senior Tranches by attachment%, 5y**

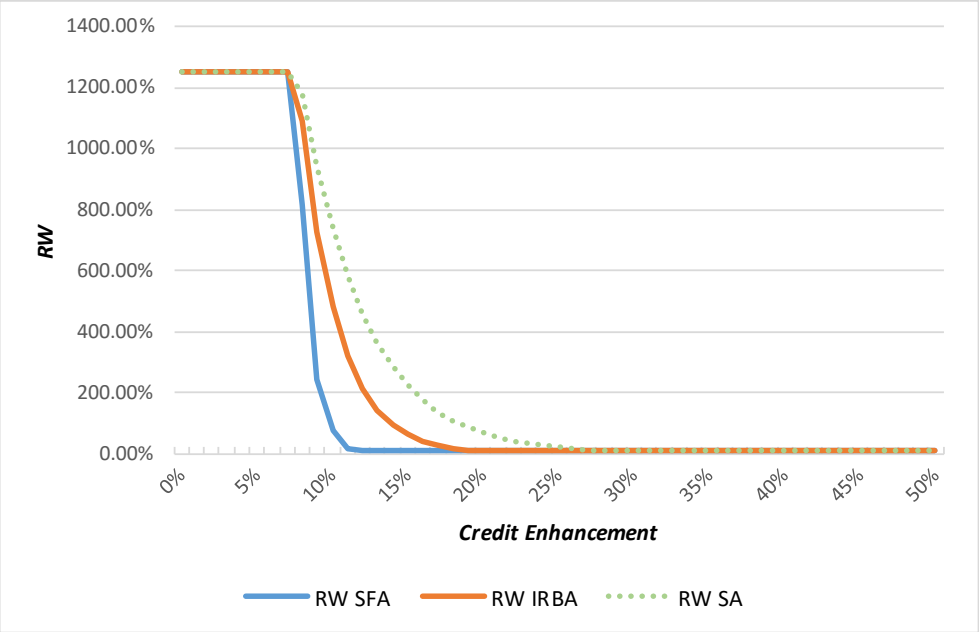


**Figure S-2: Marginal Risk Weight by attachment%, 5y**

It proves clear how the new approaches which the EC wants to introduce in place of the current SFA, are more conservative not only at high credit enhancement levels, where it is obvious because of the increased RW floor, but at low credit enhancement levels too; indeed, both the SEC-IRBA and the SEC-SA imply a

higher RW in the extreme case of a senior tranche with a thickness of 100% (A = 0% and D = 100%), and this difference remains stable for all the possible attachment points.

For better visualisation is useful to look at the marginal risk weights: here it can be noticed that the marginal risk weight is equal to 1250% until the $K_{IRB}$ level, 8.16% in this example, and then it starts to decline toward zero, which is the value of the marginal risk weight reached starting from the moment in which the RW of the senior tranche becomes equal to its floor value, remaining hereafter stable.

(2) the consequences of an RW transaction from an originator's perspective **on a specific exemplificative credit portfolio over its life**.

***Securitised Pool***

| | |
|---|---|
| ***Size*** | *1,000,000* |
| ***KIRB*** | *4.70%* |
| ***Pool PD Average*** | *1.40%* |
| ***Pool LGD Average*** | *30%* |
| ***Pool RW Average*** | *53.50%* |
| ***N*** | *1350* |
| ***MT*** | *5y* |

***Portfolio Tranching***

| | |
|---|---|
| ***Junior Tranche*** | *0-4.5%* |
| ***Mezzanine Tranche*** | *4.5-6%* |
| ***Senior Tranche*** | *6-100%* |
| ***Hedging*** | *Junior & Mezzanine 100%* |

***Junior Investor Profitability Target***

| | |
|---|---|
| ***Target IRR of the Investor*** | *6.65%* |
| ***Junior Coupon*** | *12.50%* |

The graph above combines the two output of the impact analysis:

(i) The bar charts illustrate the risk weight absorption of the senior tranche of the securitised portfolio at the end of each year over the life of the transaction, starting from the inception date to the clean-up call date, for each of the scenarios detailed in the caption;

(ii) The line charts illustrate the cost of freed capital for the same scenarios of the corresponding bar chart.

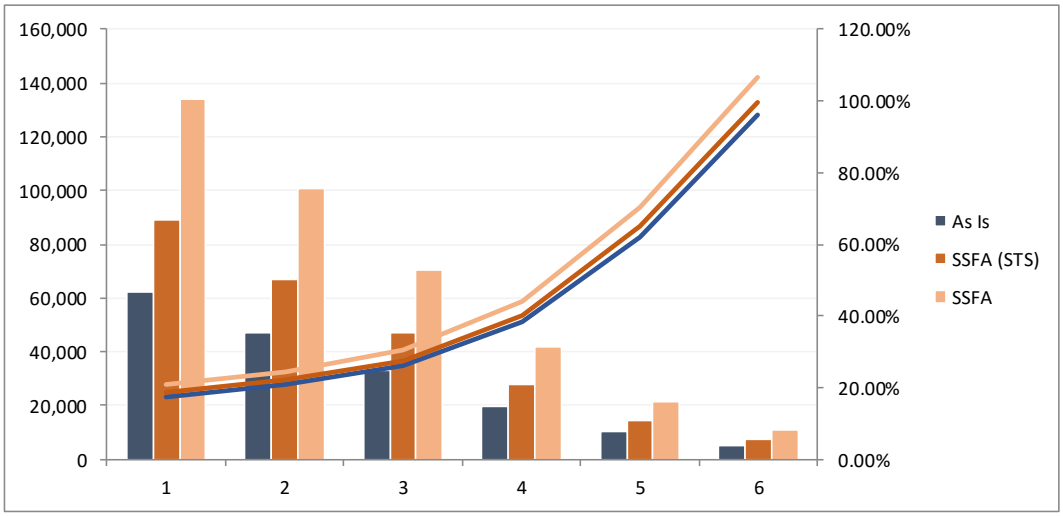


**Figure S-3: Impact simulation for synthetic securitisation**

In accordance with the impact assessment by credit enhancement of the previous paragraph, it is clear how the new approaches are consistently more conservative than the current SFA.

Furthermore, here it is possible to appreciate the higher cost the originator institution will have to pay in order to free the same capital requirement.

The implemented analysis compared the capital requirements calculated under the current Supervisory Formula Approach with the capital requirements calculated under the new Simplified Supervisory Formula Approaches (SEC-IRBA & SEC-SA).

In particular, the impact analysis has been illustrated by two different perspectives:

(i) the consequences of an RW transaction from an originator's perspective, who retains a senior risk exposure only, **at different credit enhancement levels**;

(ii) the consequences of an RW transaction from an originator's perspective **on a specific exemplificative credit portfolio over its life**.

The results of the simulation at different credit enhancement levels has been consistent with the simulation on a specific exemplificative credit portfolio.

Indeed, both the analysis highlighted the willing of the European Commission to strengthen the capital requirements for securitisation transactions in order to renew the investor's confidence in this type of structured products.

The most important evidences have been:

- the greater sensitivity of the supervisory formulas to the riskiness of the securitised portfolio, confirmed looking at both the average probability of default of the pool and at its maturity;
- the meaningfulness of the new parameters introduced by the amendment proposal, as for instance:

(i) The maturity parameter, which directly takes into consideration the risk embedded in the length of the life of the underlying portfolio;

(ii) The p-parameter, which combines several information of the pool.

- The high, and probably excessive, penalties for non-STS transactions and for portfolios of retail exposures.

The result of this more sensitive and more conservative framework is a lower efficiency of synthetic securitisation transactions as capital optimisation tools. In fact, higher risk weighted assets for equivalent portfolio in terms of risk imply a lower capital requirement relief; therefore, freeing capital by means of synthetics would be costlier and so less efficient with respect to the issuance of new capital on the primary market.

If the economic interest behind these transactions and their role as a capital optimisation tool would disappear, investors could get into a situation in which they are willing to buy products that originators are not inclined to sell anymore.

So, as it always happens when there are opposed interests, the best solution would probably be in the middle. The securitisation products need to win back the confidence of the market and this cannot disregard an amendment of the Securitisation Framework; but, this does not necessarily have to imply damaging originator institutions businesses.

Securitisation, should serve a more stable financial system through risk sharing. However, in practice, the securitisation market has been prone to the twin problems of asymmetric information and moral hazard and has been extremely unstable. In order to

solve these problems, there have to be put forward amendments to make securitisation market more reliable, even during times of crisis by:

- Making the market more transparent and by better aligning interest of market participants, for instance banning re-securitisations;
- To empower the supervisors, to prevent any threat to financial stability through the revival of the European securitisations market.

Probably, transparency, together with the alignment of the interests of market participants and the empowerment of supervisor would be more effective tools than deprive securitisations of their essence, in order to foster the recovery of this market so important for the European economy.