



Securitization

Structured finance solutions

March 2018

Contents

| | | |
|-----------|---|-----------|
| 1. | Preface | 4 |
| 1.1 | Introduction | 4 |
| 1.2 | The appeal of securitization | 4 |
| 1.3 | A new European financial market landscape | 4 |
| 1.4 | The state of the EU securitization market | 6 |
| 2. | Industry fundamentals | 9 |
| 2.1 | Benefits of securitization | 9 |
| 2.2 | The process | 10 |
| 2.3 | Types of asset-backed securities | 10 |
| 2.4 | Risk and return profiles of tranche notes | 11 |
| 2.5 | The cash flow waterfall | 12 |
| 2.6 | True sale securitization | 13 |
| 2.7 | Synthetic securitization | 14 |
| 2.8 | Credit enhancement | 16 |
| 2.9 | Securitization parties | 18 |
| 2.10 | Capital Requirements Regulation | 24 |
| 3. | Luxembourg securitization | 39 |
| 3.1 | The Luxembourg securitization framework | 39 |
| 3.2 | Benefits of Luxembourg securitization | 40 |
| 3.3 | The Luxembourg stock exchange | 42 |
| 3.4 | Securitization vehicles | 42 |
| 3.5 | Authorization and supervision | 45 |
| 3.6 | Accounting | 45 |
| 3.7 | Reporting obligations | 45 |
| 4. | Structuring scenarios | 49 |
| 4.1 | Structuring scenarios | 50 |
| 5. | Our services and technology | 65 |
| 5.1 | Our services | 66 |
| 5.2 | Our technology | 68 |

“It is widely agreed that when used properly, securitization can increase the availability of credit and reduce the cost of funding. As a funding tool, it can contribute to a well-diversified funding base. As a risk transfer tool, it can also act to improve capital efficiency and allocate risk to match demand.”

Esma, 13 June 2016



Ekaterina Volotovskaya

Partner
Securitization leader

1. Preface

1.1. Introduction

The *Law of 22 March 2004*, as amended (“the Securitization Law”), sets out a comprehensive and flexible legal, regulatory, and fiscal framework to encourage securitization business in Luxembourg. The Securitization Law was devised to facilitate capital market transactions and/or intra-group transactions, or a combination of both, but can also be used in the context of restructuring.

Aside from the obvious benefits associated with freeing up the regulatory capital that must be set aside by banks, securitization can act as a catalyst for additional lending to the real economy. Transferring the risk of some loans to other banks or long-term investors such as pension funds and insurance companies generates new lending capacity. This is crucial for the European economy, since banks are then free to extend new loans to households and businesses—in particular, small and medium-sized enterprises.

1.2. The appeal of securitization

Securitization can also be an effective mechanism in the deleveraging of European banks. Europe's largest banks

held non-performing loans (NPLs) with a gross carrying amount of around €1.0 trillion (and with a net carrying amount of €560 billion) at the end of 2016 (gross NPLs amounted to 5.1 percent of gross loans in the EU at the end of 2016¹). The refinancing and restructuring of these legacy loan portfolios through securitization can help such banks restructure their balance sheets and transfer the credit risk of exposure to the wider capital market.

From a capital market perspective, securitization can provide additional investment opportunities to institutional investors with differing asset diversification, risk and returns, and duration profiles. The repackaging of non-liquid assets or loans into new financial instruments enables conversion from illiquid to liquid securities. Investors can therefore gain exposure to different asset classes such as real estate, shipping, consumer finance, aviation or vehicle leases without directly financing individual assets and violating investment policies or restrictions.

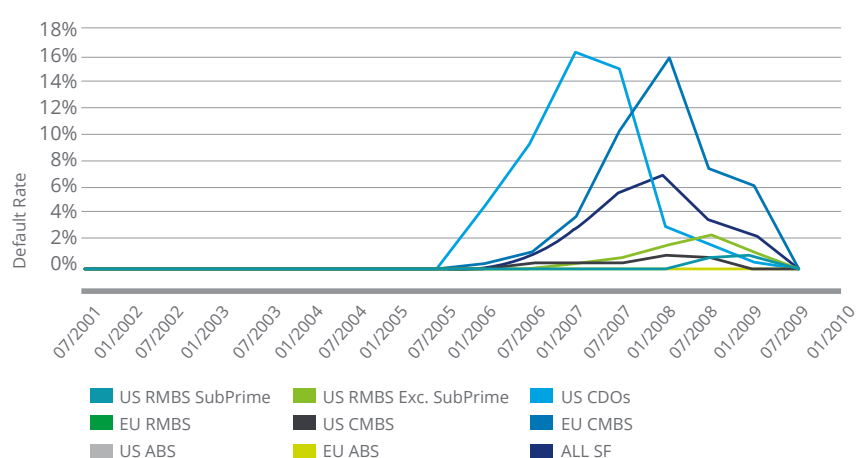
Securitization can also present untapped opportunities for banks in Luxembourg seeking to adopt a new business model or broaden the appeal of their product range

to professional investors and high-net worth clients. Finally, securitization may serve as a solution to run-off sub or non-performing private equity (PE) and illiquid hedge fund investments.

1.3. A new European financial market landscape

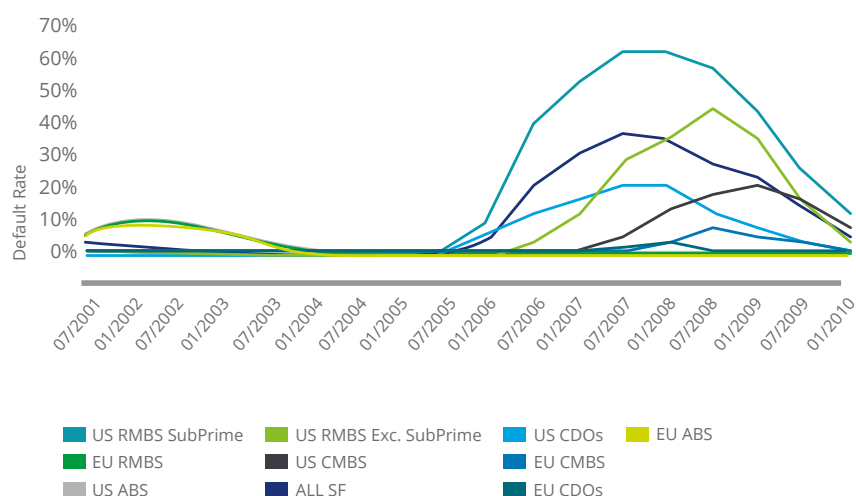
The European Commission (EC), the European Central Bank (ECB) and the Bank of England (BoE) have taken a positive view and aim to restart EU securitization notwithstanding that securitization has been stigmatized—sometimes rightly, sometimes not—as one of the major contributors to the financial crises of 2008². However, a clear distinction between EU and US securitization must be drawn, as attributes and performance were markedly different. According to data compiled by the EBA, the worst-performing EU securitization products in the “AAA” and “BBB” segments defaulted by only 0.1 percent and 0.2 percent, respectively, at the height of the financial crisis. This was in stark contrast to default rates of 16 percent and 62 percent, respectively, for US securitization products rated “AAA” and “BBB”³.

Figure 1: Three-year default rates at AAA level per asset class (July 2001-January 2010—S&P, Moody's and Fitch)



Source: European Securities and Markets Authority (ESMA) central repository (CEREP) and EBA calculations; adopted from EBA

Figure 2: Three-year default rates at BBB level per asset class (July 2001-January 2010—S&P, Moody's and Fitch)



Source: ESMA CEREP database and EBA calculations; adopted from EBA

These significant differences in default rates between EU and US securitization can be traced back to the features of US sub-prime residential mortgage securitization pre-2008, which was often characterized by:

- Poor assessment and monitoring of the creditworthiness of the underlying mortgage borrowers
- Inadequately structured incentive structures for sponsors and originators (the “originate-to-distribute model”)
- Complex securitization and re-securitization processes such as collateralized debt and loan obligations
- Limited disclosure requirements impairing the ability of investors to understand the associated risks
- An overreliance on credit agencies, which were being paid by sponsors and originators to provide investors with independent external assessments⁴

1 Resolving non-performing loans in Europe, European Systemic Risk Board, July 2011.

2 The case for a better functioning securitization market in the European Union: A discussion paper, Bank of England and European Central Bank, May 2014.

3 EBA Discussion Paper on simple standard and transparent securitizations, European Banking Authority, 14 October 2014.

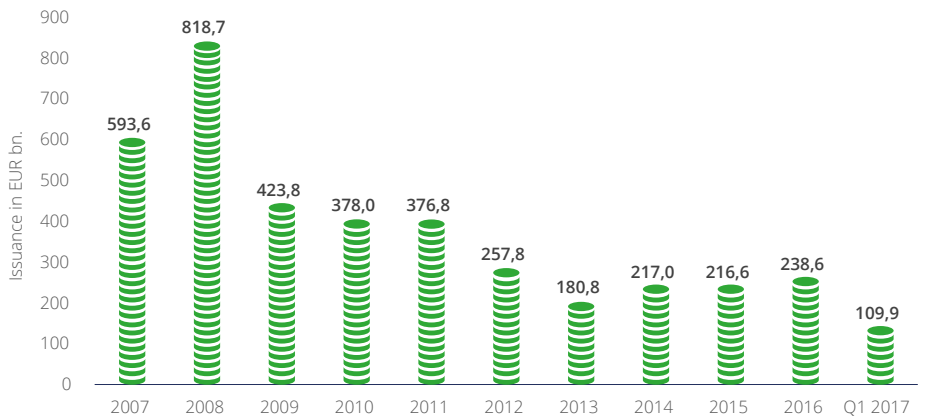
4 A European framework for simple and transparent securitization, Fact Sheet, European Commission, 30 September 2015. Nassr, I. K. and Wehinger, G. (2015) Unlocking SME finance through market-based debt: Securitization, private placements and bonds, OECD Journal: Financial Market Trends, Volume 2014/2, p. 89-190.

1.4. The state of the EU securitization market

European securitization market remains subdued and has not yet regained traction to recover to levels seen prior to the 2008 financial crisis. While European issuance peaked in 2008 at €818.7 billion, the following years brought a dramatic decline with issuance hovering at around

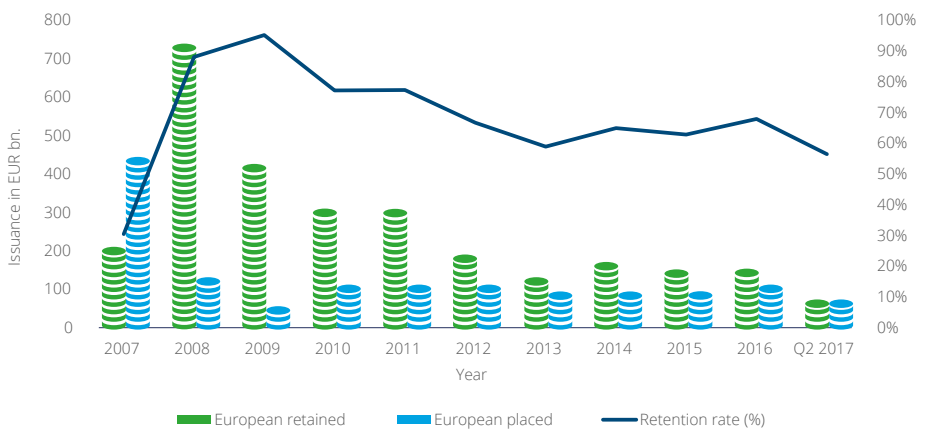
25 percent in 2016 compared to pre-2008 financial crisis levels⁵. Aside from the significant drop in European securitization, a notable change since 2007 has been the percentage of securitization vehicles placed and retained. Prior to 2007, most securitization vehicles were placed, but following the financial crisis, issuers have retained the majority of European issuance.

Figure 3: European historical issuance 2007—Q1 2017 (in EUR billion)



Source: Association for Financial Markets in Europe (AFME); Deloitte calculation

Figure 4: European historical issuance 2007—Q1 2017 (in EUR billion)

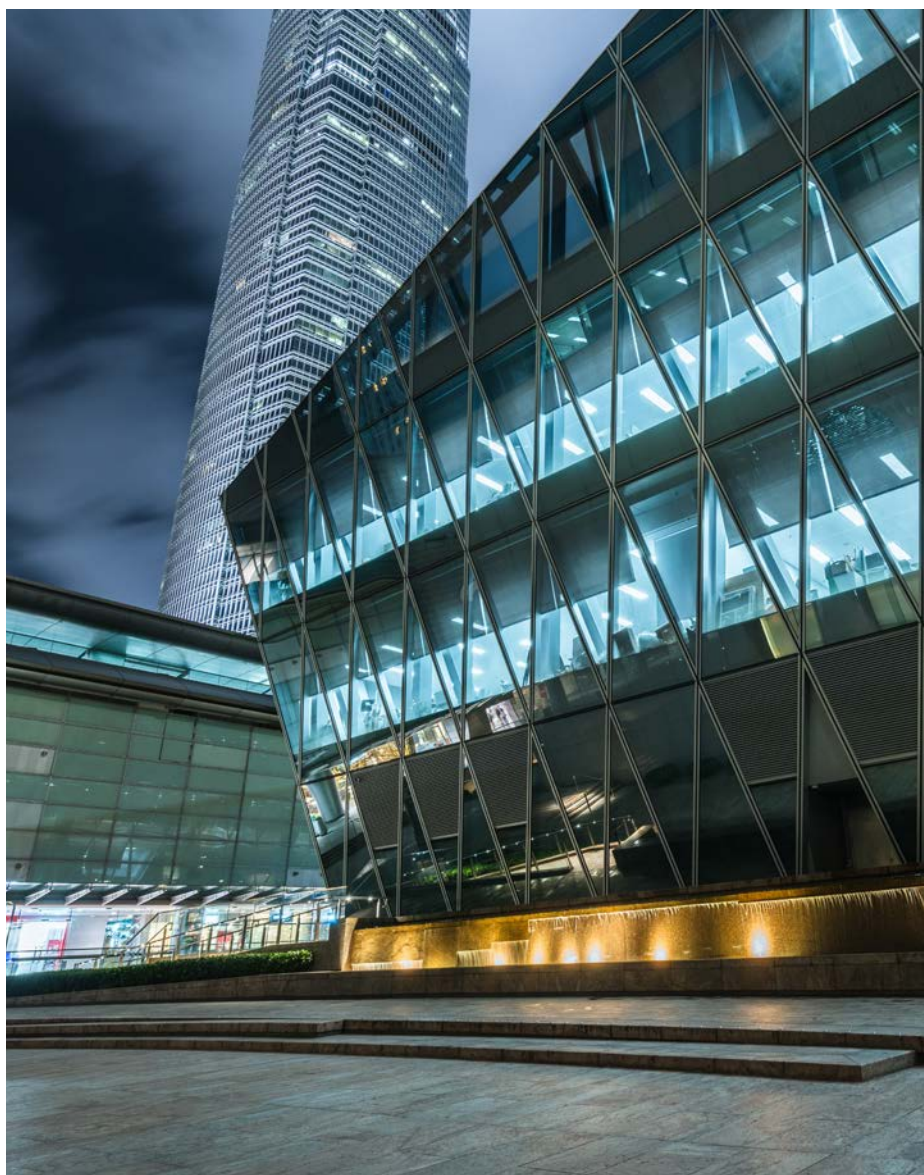


Source: AFME; Deloitte calculation

5 This stands in sharp contrast to US issuance, which has recovered more strongly. One factor that has led the US securitization market not to experience such a steep decline in issuance is the role that US government-sponsored enterprises (e.g., Fannie Mae and Freddy Mac) play. The EU estimates that around 80 percent of all US securitizations benefit from public guarantees and banks investing in such securitization benefit from lower capital charges.

This seems to indicate that issuers find it difficult to attract investors to securitization products; this may be attributed to a confluence of factors:

- Investors' ongoing lack of trust in securitization despite the very low default rate of AAA and BBB-rated EU securitization vehicles during the financial crisis. To revive securitization, market issuers, originators, and regulators may be required to educate and provide further incentives (e.g., guarantees by national governments, ECB, etc.) to investors
- Lack of securitization products/ transactions that are tailored to meet the objectives and requirements of the issuer, originator, borrower (in case of loan securitization), and investor. One example of an instance where the objectives and requirements of the issuer, originator, sponsor, borrower, and investor can diverge is SME true-sale loan securitization
- On 28 December 2017, the European Union published in its Official Journal the Regulation (EU) 2017/2402 or Securitisation Regulation. While this Regulation does not impact all Luxembourg Securitisation vehicles, the requirements for banks other institutional investors will be increased. The Regulation is applicable as from 1 January 2019



“To ensure that investors perform robust due diligence and to facilitate the assessment of underlying risks, it is important that securitization transactions are backed by pools of exposures that are homogenous in asset type, such as pools of residential loans, or pools of corporate loans, business property loans, leases and credit facilities to undertakings of the same category, or pools of car loans and leases, or pools of credit facilities to individuals for personal, family or household consumption purposes.”

European Banking Authority 2018



2. Industry fundamentals

Securitization: Why and how does it work?

2.1. Benefits of securitization

Securitization is a technique used to convert illiquid assets/claims into tradeable securities. These illiquid assets/claims may include bank or car loans, lease contracts, trade receivables, and insurance premiums, among others. Securitization acts not only as a means to raise cash on the capital markets, but also as a credit risk transfer tool. For investors, it provides attractive and diversified investment opportunities without the need to set up a complex and expensive client-facing infrastructure. Instead, they can leverage and benefit from the lending and servicing expertise of originators. Removing loans from the balance sheets of banks can also have macro-economic benefits as banks can create more new lending, which has a positive impact on the economy.

- Benefits for original lenders/originators:
 - Creation of liquidity
 - Funding diversification
 - Reduction in funding costs
 - Risk reduction and transfer
 - Regulatory capital relief
 - Raise capital without prospectus-type disclosure
- Benefits for investors:
 - Tailored investments
 - Portfolio diversification
 - Risk sharing

2.2. The process

In its most basic form, securitization is the process whereby illiquid assets or rights are pooled and transformed into tradeable and interest-bearing financial instruments that are sold to capital market investors. The pool of underlying assets or rights, also known as the “reference portfolio” or “collateral pool”, may be homogenous or heterogeneous. Interest and principal payments from the assets or rights are passed on to capital market investors through a securitization special purpose entity (SSPE). Reference portfolios may contain assets such as vehicle loans and leases, residential mortgages, commercial mortgages, credit card receivables, student loans, aircraft leases, or brand and franchise royalties that are generated by a company or a financial intermediary (the “Originator”).

(CMBS) are secured by commercial real estate such as office buildings, shopping malls, logistics centers, and industrial properties

Collateralized debt obligations (CDOs) are financial instruments that pool a group of assets such as high-yield debt or ABS, which are then repackaged into discrete tranches that are sold to investors. The underlying collateral pool of CDOs may be either static or dynamic. In a static CDO structure, the entire reference portfolio is fixed and the underlying assets cannot be changed at any point in the entire lifecycle of the CDO. Dynamic CDO structures are actively managed by the CDO manager, who selects the collateral pool and often manages the CDO reference portfolio, and can also replace underlying assets to increase performance and decrease credit risk:

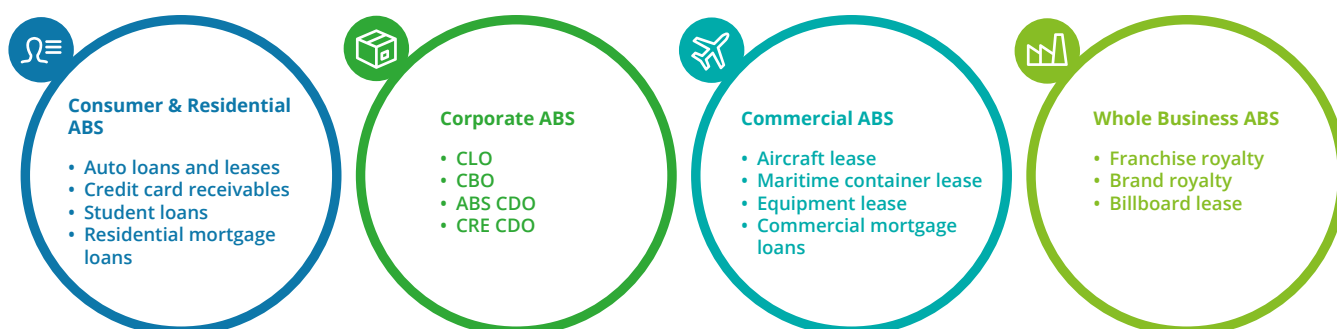
2.3. Types of asset-backed securities

Asset-backed securities (ABS) can be broken down into more granular categories depending on the collateral type of the underlying reference portfolio. Mortgage-backed securities (MBS) are a type of asset-backed security secured by the principal and interest payments of a single mortgage or a pool of mortgages:

- Residential mortgage-backed securities (RMBS) are secured by residential property, usually single-family homes
- Commercial mortgage-backed securities

- Collateralized bond obligations (CBOs) are CDOs backed by a collection of low-grade corporate (junk) bonds
- Collateralized loan obligations (CLOs) are CDOs backed by a pool of leveraged bank loans
- Commercial real estate CDOs (CRE CDOs) are backed by commercial real estate loans and bonds

Figure 5: Overview of ABS by collateral type



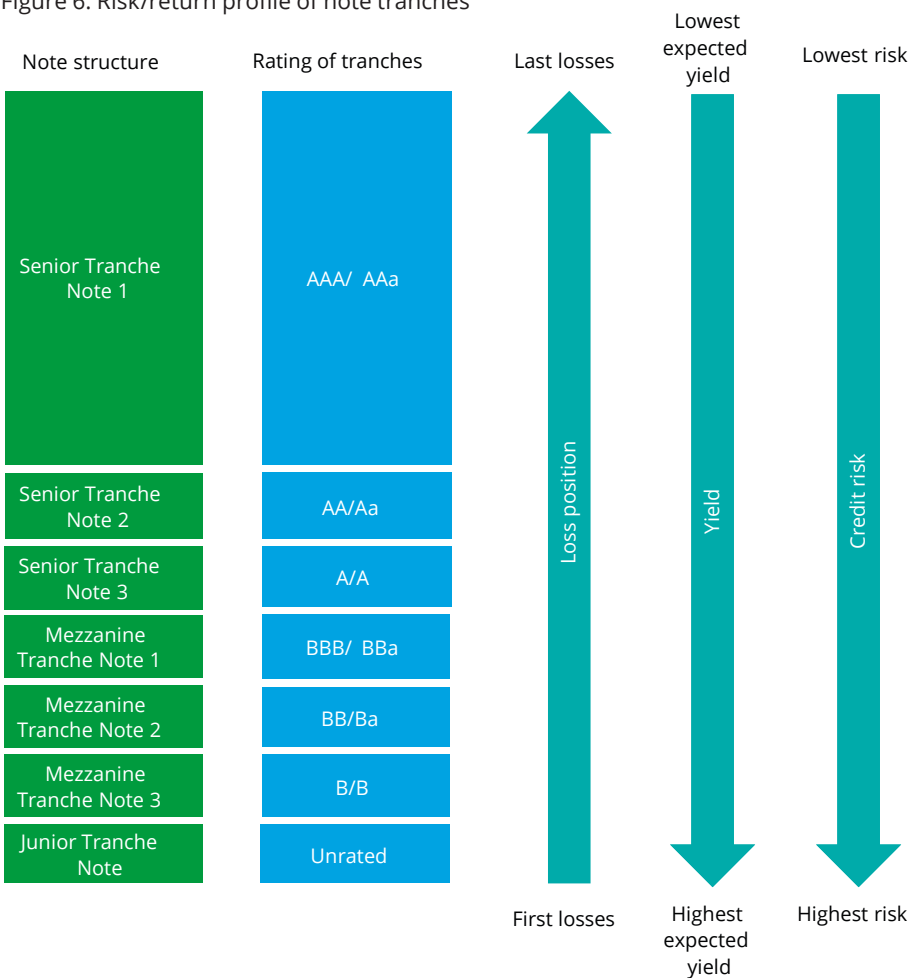
2.4. Risk and return profiles of tranche notes

Notes or bonds issued by an SSPE (the “Issuer”) can be subdivided into graduated slices to attract a diverse range of investors with different risk and return requirements. These slices, known as “tranche notes”, are then sold separately to investors. Tranches can pay fixed or floating-rate interest and the investment returns (interest and principal repayment) are allocated among the tranches in accordance to their seniority. For example, the most senior and least risky tranche receives investment returns generated by the collateral pool ahead of other tranches and is last to incur losses. Due to the lower risk profile of senior tranches, the expected return is lower than for higher risk tranches (i.e., mezzanine or junior). As each tranche has

a distinct level of risk associated with it, investors may only be eligible to invest in certain tranches and/or build portfolios with specific risk and return profiles by investing in a mixture of senior, mezzanine and junior tranche notes.

Typical investors in senior tranche notes include insurance companies, pension funds, and other risk-averse investors. Junior notes, also referred to as first-loss tranches, are generally unrated and offer the highest investment yield, but must absorb the first losses on the collateral pool. Investors in junior tranches tend to be hedge funds and other investors seeking higher risk/return profiles. The Originator can also retain junior tranche notes if no investors are found or to satisfy the risk retention requirements under the EU Capital Requirements Directive (CRD IV) and the Capital Requirements Regulation (CRR).

Figure 6: Risk/return profile of note tranches



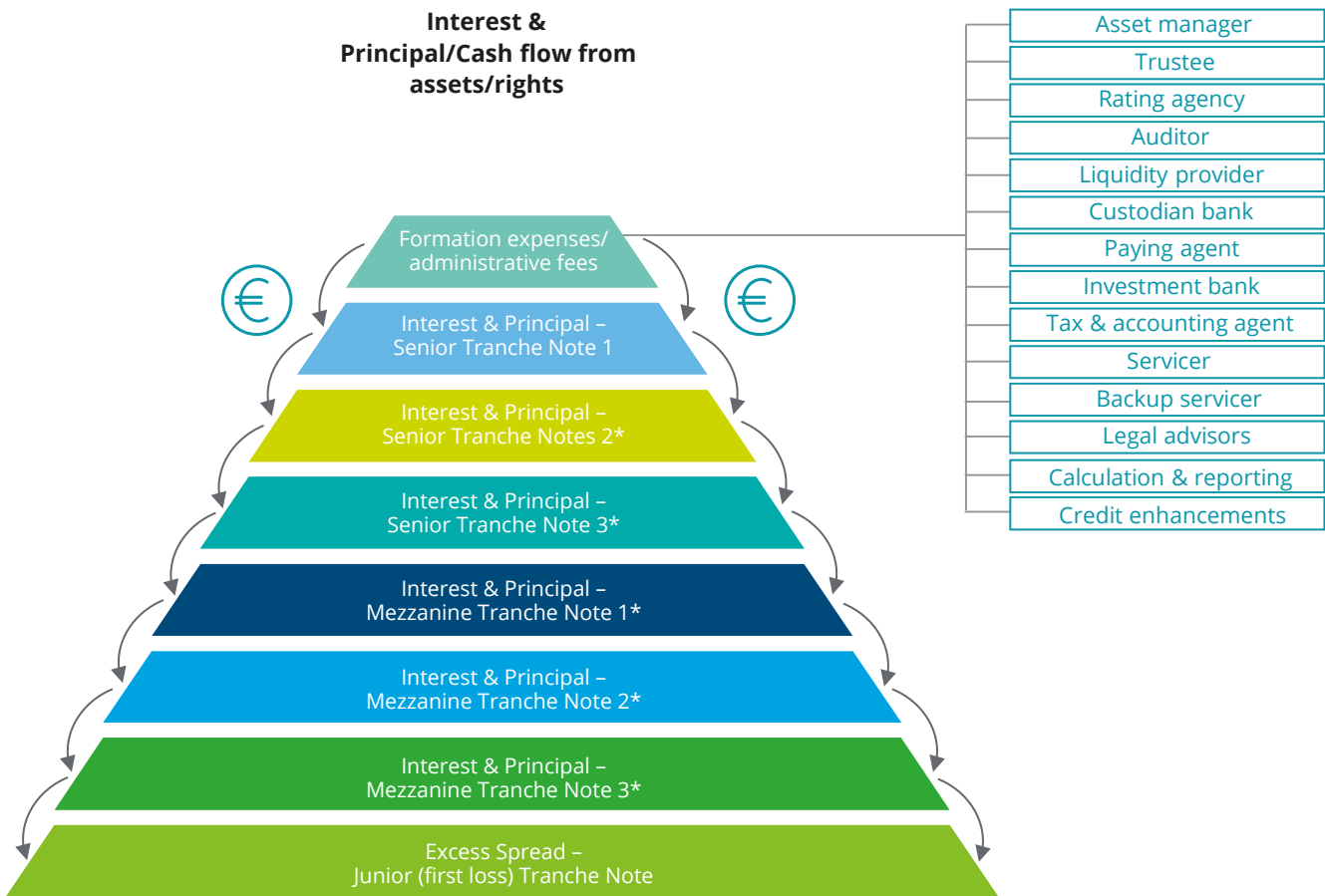
2.5. The cash flow waterfall

Most securitization transactions follow a predetermined schedule that prioritizes the manner in which interest and principal payments from the collateral portfolio must be allocated. This schedule, which is explained in the documents associated with the issuance (i.e., the prospectus), is known as the “cash flow waterfall” or simply the “waterfall”. In conventional waterfalls, senior tranches receive cash flows after payment obligations to securitization servicers (e.g., auditor, custodian bank, etc.) and agents (e.g., administrative agent, trustee, paying agent, etc.) are met.

Investors in mezzanine tranches receive the residual cash flow once the obligations to senior tranche holders

have been fulfilled. The residual cash flow for junior tranche holders after all scheduled periodic payment obligations to securitization servicers/agents, senior, and mezzanine tranche holders are met is known as “excess spread”. This excess spread serves to enhance the internal credit of the securitization structure and can be deposited in a dedicated “spread or reserve account” until some or all of the notes mature. The excess spread then serves as a first line of defense to absorb losses in the event that the reference portfolio underperforms. If individual loans or a portfolio of loans experience delinquency or default, the cash from the excess spread account is used to pay the noteholders. Alternatively, the excess spread can be periodically paid out to junior tranche noteholders, thereby increasing the yield for those investors.

Figure 7: The cash flow waterfall



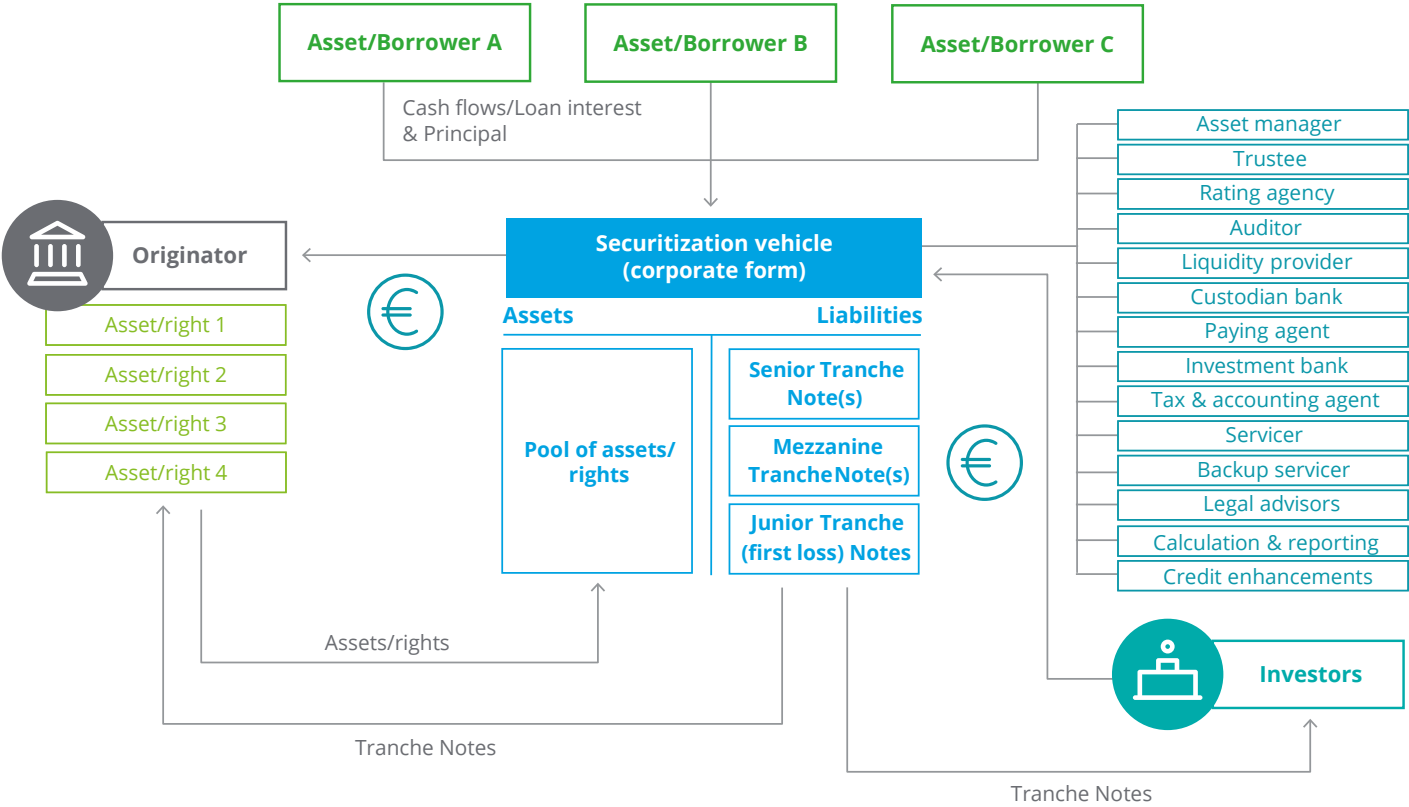
* Note: Please note that the waterfall can also be structured so that Senior Tranche Notes rank parri passu among each other. A possible pari passu ranking can also be structured for Junior Tranche Notes

2.6 True sale securitization

The true sale securitization process generally involves two steps. Firstly, the Originator identifies the assets or rights of which credit risk and/or legal ownership should be removed from its balance sheet and pooled. Originators aiming to remove both the legal ownership and the credit risk related to the assets or rights from their balance sheet sell and transfer the reference portfolio to an SSPE. In such “true sale” securitization transactions, it is imperative that once the sale and transfer of the assets or rights to the SSPE has been carried out, the transaction cannot be challenged, voided, or otherwise reversed if the Originator is declared insolvent or bankrupt.

In step two of the process, the Issuer of the pooled assets or rights finances the acquisition through the issuance of tradeable and interest-bearing financial instruments that are sold to investors. As mentioned above, these bonds or notes can be sold in tranches with different seniorities in accordance with the cash waterfall.

Figure 8: Overview of true sale securitization





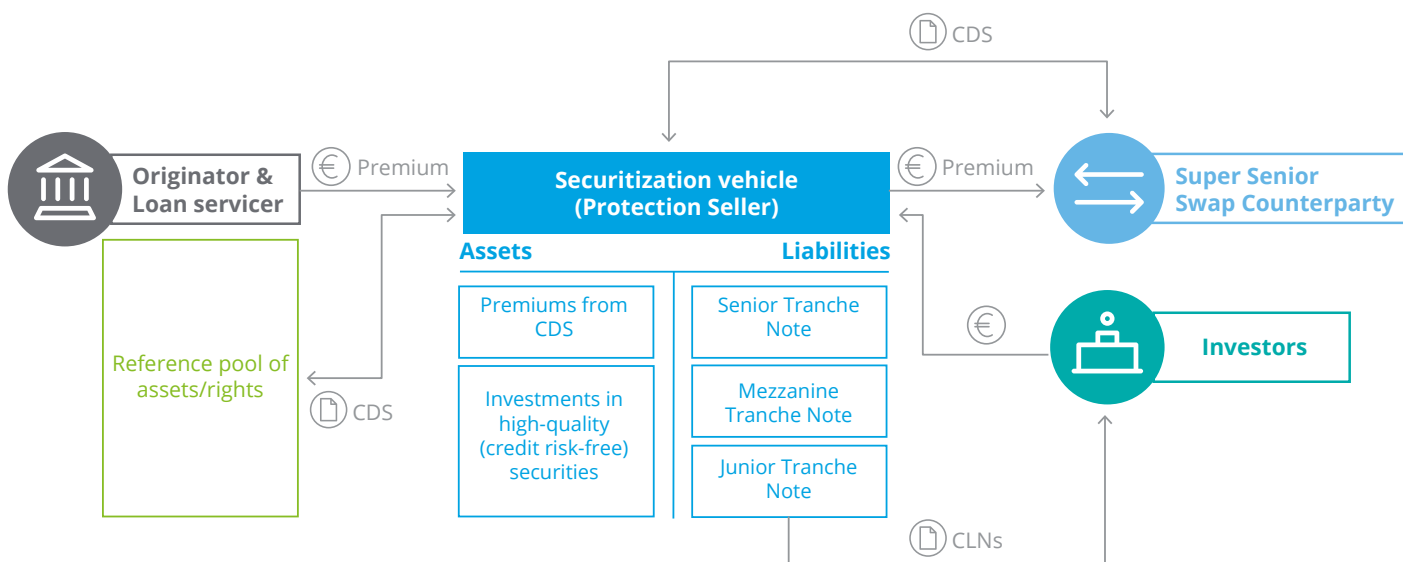
2.7. Synthetic securitization

Synthetic securitization is another type of transaction enabling credit risk to be transferred and regulated financial institutions to reduce regulatory capital requirements. The key difference between synthetic securitization and true sale securitization is that the Originator does not sell and transfer legal title of the assets or rights to the Issuer, and subsequently may not obtain any funding or liquidity under the transaction. Instead, the Originator only transfers the credit risk of the reference portfolio to capital market investors through an SSPE by entering into a series of funded and unfunded credit derivatives, usually credit default swaps (CDS) but also total return swaps (TRS) or credit-linked notes (CLNs).

In a simple synthetic securitization transaction, the Originator (the “Protection Buyer”) enters into a single CDS on the underlying reference portfolio as a whole or a series of CDS with the SSPE (the “Protection Seller”). In the event of a default or any other credit event affecting the reference portfolio, the Protection Seller will pay an amount to the Protection Buyer. In return for the transfer of the credit risk, the Protection Buyer will pay a fixed amount upfront—the premium—to the Protection Seller on a quarterly or yearly basis over the life of the CDS.

Unfunded credit derivatives are bilateral, privately negotiated credit derivatives contracts. In such transactions, the Protection seller does not make any upfront payment to the Protection Buyer. The Protection Seller will only make a payment to the Protection Buyer to cover losses when a credit event occurs. This means that the Protection Buyer is exposed to (counterparty) credit risk and relies upon the Protection Seller being able to pay an agreed settlement amount. CDS and TRS are types of unfunded credit derivatives.

Figure 9: Overview of synthetic securitization



The SSPE also issues CLNs that are sold to investors, who typically assume the risk of the mezzanine tranche, which is equal to the remaining notional amount (face value) of the CDS. The SSPE deposits the amount received from the sale of the CLNs in a bank account as collateral or invests the proceeds in risk-free financial instruments. Over the life of the transaction, the SSPE passes on the premiums received on the CDS to the CLN investors. In addition, and depending on the transaction structure, the returns earned by the SSPE on the financial instruments/amount in the interest-bearing account are then passed back to the Originator or paid out to the CLN investors.

The SSPE also enters into a back-to-back unfunded super senior CDS with a highly rated swap counterparty (e.g., a bank) and therefore passes on a portion or all of the credit exposure of the reference pool of assets or rights. This super senior CDS can sometimes represent up to 80 percent of a synthetic securitization structure's notional amount and sit above the CLNs in the waterfall structure.

Because of the higher degree of flexibility offered by synthetic securitization and in the absence of sale and transfer of legal

title of the underlying assets or rights of the reference portfolio to the SSPE, such transactions can be brought to the market more quickly without a need for extensive legal analysis across multiple legal jurisdictions.

Funded credit derivatives entail the issuance of a series of debt obligations by a bank or SSPE, which are then purchased by one or more Protection Sellers. In contrast to unfunded credit derivatives, there is an upfront payment to the Protection Buyer, who has no exposure to credit (counterparty) risk. A CLN is a type of a funded credit derivative. CLNs carry an embedded credit derivative, for example a CDS. The amount payable (principal and interest) under the CLN will depend on the premium payments received on the CDS that are being passed on to investors, potential credit events (write downs of losses on the notes), and the returns on the risk-free financial instruments.

2.8. Credit enhancement

Without an investment grade rating, it is very difficult to market a securitization transaction to institutional investors, who are generally only permitted to invest in securities with an investment grade rating. To attract investors, a securitization transaction therefore typically requires some form of credit enhancement in order to achieve an investment grade rating for one or several note classes. Credit enhancement increases the creditworthiness of the notes to be issued by the SSPE and protects investors from bearing all the risk of the collateral pool if economic conditions deteriorate.

There are two forms of credit enhancement; external and internal. Internal credit enhancement refers to measures taken inside the securitization structure and measures include overcollateralization, subordination, and the use of reserve accounts. External credit enhancement involves third-party guarantees such as insurance policies and letters of credit. It is critical for the issuer to examine each form of credit enhancement prior to issuance in order to identify the most cost-effective credit enhancement mechanisms. Generally, the issuer will consider the trade-off between improving the credit rating of particular note classes in the structure versus the reduction in yield required to sell the notes to investors.

2.8.1. Internal credit enhancement Over-collateralization

One form of internal credit enhancement is overcollateralization. This form of credit protection is generated by issuing securities with a face value that is lower than the face value of the underlying collateral pool. For example, if the collateral pool consists of exposures with a combined face value of €300 million and the issuer targets a triple-A rating for some or all securities to be issued, the issuer/sponsor would obtain an indication from a credit rating agency as to how many securities it could issue versus the collateral pool in order to achieve

the desired rating. Having assessed the creditworthiness of the underlying borrowers, granularity of the exposure pool, expected default rates, correlations among loans, and other factors, the credit rating agency may decide that securities with a face value of €280 million could be issued. Thus, in circumstances where some of the underlying borrowers default on their payment obligations, the issuer would still be able to honor principal and interest payments to the investors. Assuming all borrowers meet their payment obligations, the cash flows from the extra €20 million can be used to redeem securities earlier or to redeem securities preserved within the securitization structure and allocated to a reserve account. After all notes have been redeemed, the remaining funds in the reserve account and any remaining collateral will be distributed to the originator.

Reserve/spread funds

Reserve accounts come in two forms (cash reserve funds and excess spread), and are funded at the beginning of a securitization transaction (usually by the originator). The party that deposits funds into the reserve account will normally hold a residual interest in the reserve account. Funds paid into the reserve account may typically only be invested in highly liquid, investment grade securities. If a borrower in the exposure pool defaults on a payment obligation, the unpaid principal balance of the exposure is deducted from the reserve account and paid to the investors. If funds are subsequently recovered through the foreclosure/asset enforcement process, these amounts are either used to replenish the reserve account or paid over to the party that holds the residual interest in the reserve account.

Excess spread accounts involve the allocation of the excess spread into a separate reserve account. The excess spread is the amount remaining after all periodic administration expenses (e.g., asset servicing fees, etc.) and payments to investors have been made. Usually, the excess spread account increases over time up to some pre-defined level and is

used to absorb losses from the exposure pool. The terms governing the spread account are normally dictated by the credit rating agency as the basis for obtaining an investment grade rating.

Subordination

One of the most common forms of internal credit enhancement is the subordination of some tranche notes in order to obtain a higher investment rating for other, more senior, tranche notes. The subordinated tranche notes are intended to absorb losses from the collateral pool prior to more senior note classes. Based on an analysis of the collateral pool, a credit rating agency will specify how many triple A notes, double A notes, B notes, and so forth, can be issued.

The following is a simple example of how subordination works. Assume the collateral pool contains 100 loans each worth €1 million and the credit rating agency assesses the cumulative default risk on the collateral pool at 10 percent. The objective of the issuer/sponsor is to create tranche notes with an investment grade rating. The easiest way to achieve an investment grade rating is to create subordinated tranche notes/classes in the amount of €10 million and senior ranking tranche notes/classes in the amount of €90 million. In the event of a default on a collateral loan, the loan amount would be deducted from the balance of the subordinated tranche notes/classes. This means that the senior ranking tranche notes/classes would be protected from the risk of loss until the tenth loan default.

2.8.2. External credit enhancement

Letter of credit

Another form of credit enhancement is a letter of credit. A letter of credit is an irrevocable commitment in which a commercial bank or other financial institution is paid a premium to cover any losses actually incurred on the collateral pool up to the required credit enhancement amount.

Surety bonds

Surety bonds are insurance policies that reimburse the issuer for any losses on the collateral pool. Surety bonds—also often referred to as performance bonds—are issued by third parties, usually triple-A rated insurance companies. Surety bond providers generally guarantee (often referred to as a wrap) the principal and interest payments for specific note classes. The cost of this guarantee is determined by the insurance company's perceived credit risk in the underlying collateral pool. The biggest perceived disadvantage of this form of credit enhancement is “event risk”, meaning that if the credit enhancement provider is downgraded, the note classes guaranteed by the credit enhancement provider are typically downgraded as well.

Figure 10: Sample subordination structure

| Note class | Rating | Percentage of Structure | Par Value in € | Coupon | Credit Enhancement | Max Expected Loss |
|--------------|---------|-------------------------|--------------------|----------------|--------------------|-------------------|
| A-1 | AAA | 63% | 176,400,000 | LIBOR + 210bps | 38.0% | 0.0036% |
| A-2 | AA | 11% | 30,800,000 | LIBOR + 300bps | 25.3% | 0.0743% |
| A-3 | A | 6% | 16,800,000 | LIBOR + 400bps | 18.4% | 0.4560% |
| B-1 | BBB | 5% | 14,000,000 | LIBOR + 500bps | 13.1% | 1.5675% |
| B-2 | BB | 5% | 14,000,000 | LIBOR + 600bps | 8.8% | 6.4130% |
| D | Unrated | 10% | 28,000,000 | Excess spread | N/A | 8.6540% |
| Total | | 100% | 280,000,000 | | | |

2.9. Securitization parties

A securitization transaction involves several parties, of which the most important are the Obligor or Borrower, the Originator, the Sponsor, the Investor, the Trustee, the Credit Rating Agency, the Asset Servicer or Collateral Manager, the Calculation Agent, and the Credit Enhancement Provider.

Figure 11: Securitization parties

Luxembourg Securitization Special Purpose Entity (SSPE)



Investor



Borrower/Obligor



Originator



Trustee



Listing agent



Calculation and reporting agent



Paying agent



Credit rating agency



Arranger/
Underwriter



CSSF



Legal advisors



Registrar



Custodian



Auditor



BCL



Asset servicer/
Collateral manager



Credit enhancer



Back-up servicer



Tax advisors



Bourse

2.9.1. Borrower/Obligor

The borrower/obligor is an individual or entity that is legally required through a contractual commitment to provide one or more payments. The quality and performance of the securitization depends on the ability of the borrower/obligor to honor all contractual obligations. If a borrower/obligor does not fulfill its contractual obligations, the obligee (e.g., bank, commercial company, SSPE, etc.) usually has the right to seek recourse in court and, in the case of secured lending arrangements, the ability to initiate unilateral collateral enforcement actions. Unless otherwise stipulated in the contractual documents, the obligee is not required to consent to the sale of the claim (loan) with the attached payment obligation to another party such as an SSPE. In many securitization transactions, the originator or an affiliate of the originator continues the customer relationship and acts as servicer to the SSPE, collects and passes on the payment collections, and acts as a loan monitoring agent.

2.9.2. Originator/Sponsor

An originator is typically an institution that was involved, either itself or through its related entities, directly or indirectly, in the creation and underwriting of the obligations involved in the securitization transaction. Such obligations arise during the course of the originators' ordinary business activity and are subject to various underwriting standards. In some instances, the originator purchases assets/claims (exposures) from third parties with view to securitizing them at a later stage. In such transactions, the originator is often referred to as the securitization sponsor. Typical originators include commercial banks, insurance companies, captive financial companies, major car manufacturers, leasing companies, commercial companies, and trade companies.

2.9.3. Investors

The investors subscribe to the securities issued by the SSPE and are therefore entitled to receive principal repayments, interest and, if foreseen in the constitutional documents, profit participations based on the cash flows generated by the underlying securitization pool. Typical investors in securitized exposures are institutional investors such as pension funds, insurance companies, alternative asset managers, investment funds, and banks. The appeal of asset-backed securities can be traced back to the higher rate of return they offer in comparison to other assets with a similar level of credit risk and the combination of different securitization tranches to achieve the desired risk/return profile. Another compelling reason for some institutional investors to invest in asset-backed securities is the regulatory environment. Institutional investors such as pension funds and insurance companies are often prohibited from engaging in loan-originating activity. Asset-backed securities therefore provide them with the opportunity to gain exposure to certain industries (e.g., real estate, shipping, aviation etc.) and/or indirectly (re)finance projects, as they can invest through rated, liquid securitization tranches.

2.9.4. Asset servicer

In the context of securitization, asset servicing describes the process of collecting the payments from the underlying borrowers in the exposure pool and transferring the collected funds to the SSPE. Perhaps because of the apparent simplicity of this task, the asset servicing role is often taken for granted by both issuers and investors, who often mainly focus on the performance of the exposure pool, the deal structure, and the price at which notes will be issued. However, asset servicing is one of the most critical elements in any securitization transaction

and it becomes increasingly complex as a result of the specialist knowledge required when dealing with sophisticated asset classes. This is why credit rating agencies place particular emphasis on the capabilities and track record of the asset servicer. The originator is frequently appointed as asset servicer of the exposure pool owing to its existing relationship with the underlying borrowers. The responsibilities of the asset servicer will vary somewhat depending on the asset class and the local market, but for a portfolio of securitized loans they may include the following important functions:

- Recording loans via a servicing database
- Accepting and processing loan payments from borrowers
- Transferring payments to the SSPE
- Reconciling bank accounts and loan balances
- Performing escrow analysis
- Collecting on delinquent accounts
- Discussing and agreeing new payment terms with delinquent borrowers
- Initiating and processing foreclosure/asset enforcement procedures in collaboration with legal advisors
- Managing accounts of borrowers that have declared bankruptcy
- Maintaining, administering, and liquidating asset holding companies

2.9.5. Trustee

The trustee's primary fiduciary duty is to preserve the interests of the investors involved in the purchase the securities issued by the SSPE. The nature of the trustee's duties is specifically set forth in the trust agreement. The trustee usually subcontracts the administration and servicing of the securitized exposure pool back to the originator, an affiliate of the originator or a third-party provider. However, the trustee retains ultimate responsibility for the administration of the SSPE that holds the securitized assets/claims.

The trustee oversees the initial creation of the SSPE that will hold the securitized exposure pool. The trustee must also confirm that the SSPE has received clear title to the securitized exposures, free of any claims, charges or encumbrances, whether actual or implied. When assets or claims are transferred to the SSPE at the conclusion of the securitization transaction, the assets or claims are pledged to the holders of securities issued by the SSPE. Since the assets or claims will serve as collateral for the repayment of the securities issued by the SSPE, the trustee

must also confirm that the security interest in the assets or claims is structured so as to ensure that the assets or claims will not be vulnerable to the claims of the SSPE's other creditors—a mechanism often referred to as "bankruptcy remoteness." The trustee usually mandates a specialized securitization or structured finance law firm and obtains legal opinions to the effect that the security interest has been soundly structured.

The trustee generally plays a passive role; however, it takes on a much more active role if any contractual breaches by agents or servicers of the SSPE, or if obligations or terms and conditions under the transactional documents are breached. In such situations, the trustee notifies the investors of the breach and awaits their instructions regarding subsequent actions it should take on their behalf. The trustee of a securitization transaction is usually entitled to be protected by the security holders against any legal claims, costs, and expenses incurred while complying with their instructions, and may ask for indemnification and upfront compensation prior to proceeding with the requested action.

When emerging problems are identified that could lead to potential covenant breaches and payment defaults, such as an underperforming exposure pool, the trustee will notify investors, mandate and liaise with legal advisors, and cooperate with investigations and negotiations surrounding the matter. The trustee may also intervene when other agents or servicers of the SSPE fail to perform their duties in accordance with the agency or servicing agreement. The trustee can meet with the agent or servicer concerning remedial actions to avoid or resolve defaults. If the agent or servicer fails to perform their duties in accordance with the agreement, the trustee can terminate the agreement and replace the agent or servicer. If the asset servicer is replaced, the trustee often serves as a temporary asset servicer until a replacement asset servicer can be identified and contracted.

2.9.6. Asset/collateral manager

In transactions involving managed (traded) assets, asset managers are responsible for assembling and monitoring the underlying collateral and, when contractually foreseen, replacing assets based on pre-defined selection criteria.



2.9.7. Credit enhancement provider

A credit enhancement provider is a third-party that agrees to support the credit quality of another party, individual securities or a pool of assets by making payments, up to a pre-agreed amount, in the event that the other party defaults on its payment obligations. Such contractual arrangements protect against the risk that the cash flows generated by the collateral pool are insufficient to meet all the amounts due to the obligor.

2.9.8. Credit rating agencies

A credit rating agency assigns a credit rating that rates a borrower's/obligor's ability to pay back debt by making timely interest payments, and the likelihood of default. A rating agency may rate the creditworthiness of issuers of debt obligations, debt instruments, and in some cases, the servicers of the underlying debt. As debt obligations can be issued in several tranches, rating agencies can also assign individual credit ratings to tranches with different seniority in the cash flow waterfall of a securitization vehicle. This means that tranches with higher seniority may have better creditworthiness than a single conventional, unstructured, and untranching note with the same overall repayment income stream. Such structural features allow rating agencies to assign senior tranches high ratings such as triple A or other high grades. Notes with a high rating are then eligible for purchase by pension funds and money market funds that are required to invest in higher-rated debt.

Three rating agencies currently dominate the market: Standard & Poor's, Moody's Investor Services, and Fitch Ratings. Smaller rating agencies include DBRS, Kroll Bond Rating Agency, and A.M. Best. These credit rating agencies employ varying methodologies to rate structured finance products, but generally focus on the type of pool of assets/claims underlying the securitization security and the overall capital structure of the SSPE. This approach often involves a quantitative assessment in accordance with mathematical models reflecting maturity and issuer

diversification, expected default rates, recovery rates, and correlation between the exposures. In addition, credit rating agencies review the following factors:

- Capabilities and financial strengths of the originator/servicer of the exposure pool;
- Legal risks embedded in the structure, e.g., ensuring that title to the exposure has been transferred and that the pledge over the collateral pool has been perfected;
- Overall soundness of the transaction structure (e.g., asset liability timing of cash flows, covenants and other default mechanisms);
- Ability of the asset servicer/collateral manager to manage the exposure pool;
- Type and quality of credit enhancement, e.g., track record of third-party guarantor.

Credit rating agencies may be paid by the originator/sponsor not only for assigning ratings to structured securities, but also for advice on how to structure tranches. This involves back and forth and analysis between the originator, sponsor, structuring and restructuring specialists, where applicable, and the credit rating agency. During this process, the originator/sponsor may submit proposed structures to the credit rating agency for analysis, review and feedback until the originator/sponsor is satisfied with the ratings of the various tranches.

2.9.9. Registrar

The primary responsibility of the registrar is to maintain the records of the registered holders of securities and to process subscriptions and redemptions of the securities issued by the SSPE.

2.9.10. Calculation and reporting agent

This party to the securitization transaction calculates and reports the distribution of interest, principal repayments and profit participation (where applicable) due to the investors and other creditors. The allocation of funds available from the exposure pool is governed by the cash flow waterfall. Generally, the following documents are submitted to the management body and investors:



The "payment report" is submitted to the management body of the SSPE; this document provides instructions on how to allocate the available funds to the holders of the securities.



The "investor report" is submitted to the holders of securities; this document includes information about the notes, the collateral pool (evolution, composition, etc.) and the performance of the securitization transaction as a whole.

2.9.11. Paying agent

The terms and conditions set out in the securitization documents specify the distribution dates on which interest and principal repayments are to be made to the investors. A few days prior to the distribution date, the paying agent receives a report from the calculation and reporting agent specifying the payment instructions for the distribution date. On the distribution date, interest and principal repayments are made by the paying agent to holders of securities and payments are also made to other creditors.

2.9.12. Arranger/underwriter

The arranger and underwriter is typically an investment bank that plans, organizes, structures, and markets the securitization transaction together with the originator/sponsor.

2.9.13. Back-up servicer

One of the primary duties of the trustee is to assume the role of back-up asset servicer in the event that the original asset servicer is removed or the contractual agreement is terminated. To mitigate the risk of issues with servicers and agents affecting the performance of the securitization vehicle, “back-up servicers” may be appointed as early as the outset of the transaction. A back-up servicer will ensure that cash collections from the underlying exposure pool and subsequent distributions of interest and principal repayments to the investors continue without interruption. A back-up servicer may also be authorized to assume responsibility for reviewing and verifying the calculations performed by the calculation and reporting agent. To prevent any loss of data and ensure a smooth migration if the servicer is removed, the back-up servicer may run parallel reporting along with the existing servicer. It is essential that the back-up servicer is always ready to immediately assume the role of servicer should it be required to do so. To that end, the back-up servicer may receive tapes/document copies from the servicer on a periodic basis.

2.9.14. Custodian

The custodian bank is responsible for safeguarding the assets of the SSPE, including liquid assets (e.g., cash, term deposits, etc.) and transferable securities (e.g., shares, bonds, etc.), and for arranging the settlement of any purchases and sales. The custodian bank is also responsible for the safekeeping of the exposure pool in true sale securitization transactions. In Luxembourg, the use of a custodian bank is only mandatory for regulated SSPEs, such as securitization funds and regulated securitization companies.

2.9.15. Liquidity provider

Liquidity providers are usually banks that provide the SSPE with a short-term liquidity facility (e.g., a revolving loan facility) in the event of non-timely cash flows from the underlying collateral pool that could interrupt payments to investors. Such bridge loan facilities cannot be used to cover defaults within the underlying exposure pool.

2.9.16. Auditor

In Luxembourg, the financial statements/annual accounts of the SSPE have to be audited by one or more independent auditors (Réviseurs d'entreprises). The auditors of a Luxembourg SSPE are appointed by the management body of that SSPE.

2.9.17. Tax and accounting advisor

The tax and accounting advisor analyses and assists with the tax-efficient structuring of the proposed transaction. The planned transaction structure is designed to mitigate potential tax or accounting implications, i.e., to minimize the corporate income tax liability of the SSPE and/or avoid withholding taxes being levied on the cash flows to investors.

2.9.18. Legal advisors

Considerable legal work is required to ensure that a securitization transaction meets the requirements of the originator and the investors while also complying with all regulations. Legal advisors will typically assist with:

- Drafting the articles of association of the SSPE (e.g., in accordance with the provisions of the Luxembourg Securitization Law)
- Drafting the prospectus and listing documents
- Reviewing or drafting the asset sale and purchase agreements
- Legal opinions regarding the perfection of the pledge over the exposure pool
- Loan restructuring (e.g., in non-performing loan transactions)
- Initiating the foreclosure and asset enforcement processes



2.10. Capital Requirements Regulation

On 31 December 2013 and 1 January 2014, new EU capital rules for financial institutions set out in the fourth Capital Requirements Directive (2013/36/EU (CRD IV)) and the Capital Requirements Regulation (Regulation (EU) No 575/2013, the CRR) came into effect. According to articles 243 and 244 of the CRR, sponsor or originator institutions may exclude securitized exposure from risk-weighted exposure amount (RWEA) calculations and expected loss amounts if significant credit risk arising from the securitized exposure is deemed to have been transferred to third parties.

2.10.1. Significant Risk Transfer

To deduct securitized exposure from the RWEA calculation, originator institutions must be able to demonstrate to National Competent Authorities (NCAs) that the requirements of a Significant Risk Transfer (SRT) are satisfied. Based on articles 243 (relating to true sale securitization) and 244 (relating to synthetic securitization), NCAs also need to consider how the level of capital relief achieved is commensurate with the risk transferred to third parties. The mechanistic tests described in articles 243 (2) and 244 (2) are passed and regulated institutions are permitted to take capital relief when the transfer of credit risk to third parties meets the following conditions:

- At least 50 percent of the risk-weighted exposure amounts of all mezzanine securitization positions held by the originator institution are transferred, where
 - i. The term “mezzanine securitization positions” denotes securitization positions to which a risk weight lower than 1,250 percent applies and that are not the most senior position in the securitization structure, and are more junior (a) in the case of a securitization position subject to Credit Quality Step (CQS) 1 within the “Standardized Approach” of article 251, or (b) a securitization position rated CQS 1 or CQS 2 under the “Ratings Based Method” of article 261
- At least 80 percent of the risk-weighted exposure amounts that are subject to a 1,250 percent risk weight or subject to a deduction from Common Equity Tier 1 (CET 1) are transferred, subject to the following stipulations:

- ii. There are no mezzanine securitization positions in a given securitization, and
- iii. The originator can demonstrate that the exposure value of the securitization positions that would be subject to deduction under CET 1 or a 1,250 percent risk weight exceeds a reasoned estimate of the expected loss on the securitized exposure by a substantial margin

It is important to emphasize that originator institutions and sponsor institutions should have policies and methodologies in place to ensure ongoing compliance with all significant risk transfer requirements according to article 243 of the CRR.

• Contractual support

On 3 October 2016, the EBA published its final guidelines on implicit support for securitization as required by article 248 of the CRR. The final EBA guidance explains that contractual support includes credit enhancement provided at the inception of a securitization transaction.

Examples of implicit support:

- Overcollateralization
- Credit derivatives
- Spread accounts
- Contractual recourse obligations
- Subordinated notes
- Credit risk mitigants provided to a specific tranche
- The subordination of fee or interest income, or
- Deferral of margin income

- **Implicit support**

Implicit support refers to support beyond that which originator and sponsor institutions are already contractually obliged to provide. For both traditional true sale and synthetic securitization, implicit support undermines the SRT requirement under article 243 and 244. Implicit support acts as a signal to the market that all or part of the contractually transferred credit risk is still with the originating institution and has in effect not been transferred. Accordingly, article 248 sets out restrictions on providing implicit support and compels originator institutions and sponsor institutions that fail to comply with the requirement to hold their own funds to hedge all securitized exposure as if it had not been securitized.

Examples of implicit support:

- Purchase of deteriorating credit-risk exposures from a securitized pool
- Addition of higher-quality risk exposures to the collateral pool
- Sale of discounted credit-risk exposures into the pool of securitized exposures at above market prices after the closing of the securitization
- The purchase of underlying exposures at above market prices
- Ad hoc credit enhancements provided to one or more tranches, or
- An increase in the first loss position

- **Arm's length transactions**

As requested by article 248 of the CRR, the EBA also published its final guidelines on what constitutes arm's length conditions in the context of securitization transactions on 3 October 2016. According to these guidelines, transactions executed at arm's length are those where the terms of the transaction are such as they would be in a normal commercial transaction, if:

A The parties had no relationship to each other (including, but not limited to, any special duty or obligation, and any ability to control or influence each other); and

B Each party:

- Acted independently
- Entered into the transaction of its own volition
- Acted in its own interests; and
- Did not enter into the transaction on the basis of extraneous factors that are not directly connected

“Securitization markets are a key funding channel for the economy, increasing the availability and reducing the cost of funding for households and companies by opening up investment opportunities to a wider investor base, diversifying risk across the economy and freeing up bank balance sheets to lend.”

Commissioner Jonathan Hill at the Eurofi Financial Forum

2.10.2. Risk retention requirements

Article 122a of the existing Capital Requirements Directive 2006/48/EC will be replaced by articles 404 to 410 of the CRR. The core element of article 122a of the CRD is a “skin in the game” requirement intended to ensure that originators of securitization vehicles retain an economic interest in their performance. This requirement is now contained in article 405(1) of the CRR, which prohibits institutions from assuming any exposure to securitization unless a bank has explicitly disclosed to the institution that it will retain, on an on-going basis, a “material net economic interest” of at least five percent in the securitization vehicle.

2.10.3. Simple, Transparent and Standardized Securitization/ Comparable securitization

European standard setters and regulators learned several lessons from the US sub-prime securitization crisis. One lesson is that opaque and complex securitization transactions may pose undesirable risks to investors and accordingly a new Securitisation Regulation was published in the Official Journal of the European Union on 12 December 2017, with an effective date of 1 January 2019. This regulation enhances the use of Simple, Transparent and Standardized Securitization/ Comparable (STS/STC) securitization⁶.

6. “Simple, Transparent and Standardized securitization (STS)” is the term used by the EC, the BoE and the ECB whereas “Simple, Transparent and Comparable securitization (STC)” is the terminology adopted by the BCBS and IOSCO: Criteria for identifying simple, transparent and comparable securitizations, Basel Committee on Banking Supervision, Bank for International Settlements and International Organization of Securities Commissions, July 2015; Proposal for a Regulation of the European Parliament and the Council laying down common rules on securitization and creating a European framework for simple, transparent and standardise securitization and amending Directives 2009/65/EC, 2009/138/EC, 2011/61/EU and Regulation (EC) No 1060/2009 and (EU) No 648/2012, European Commission, 30 September 2015; Capital treatment for “simple, transparent and comparable” securitizations, Consultative Document, Basel Committee on Banking Supervision, Bank for International Settlements, November 2015.

Simple securitization means that:

- Exposure packaged in securitization vehicles must be homogeneous loans/ receivables (e.g., car loans with car loans, residential mortgages with residential mortgages)
- No securitization of securitizations is allowed
- Loans must have a credit history long enough to allow reliable estimates of default risk
- The ownership of a loan must have been transferred to the securitization issuer (i.e., they must be sold by the creator of the loans to the entity that will issue the securitization)

Transparent and standardized securitization means that:

- Exposure packaged in securitization vehicles must have been created using the same lending standards as any other exposure, i.e., no cherry-picking is allowed
- At least five percent of the loan portfolio must be retained by the originator
- Documents must provide details of the structure used and the payment waterfall (i.e., the sequence and amount of payments to each tranche)
- Data on packaged loans must be published on an ongoing basis
- The contractual obligations, duties, and responsibilities of all key parties associated with the securitization vehicle must be clearly defined

The EU proposal of 30 September 2015 set out specific requirements with regard to simplicity (art. 8), standardization (art. 9), and transparency (art. 10):

Simplicity refers to structuring transactions and underlying assets in a less complex way to facilitate easier credit analysis and improve investor comprehension. Simplicity is governed by the following key criteria:

- The originator, sponsor, and SSPE must be established in the EU

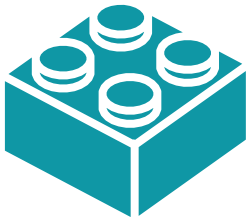
- Legal true sale and transfer of the underlying exposure (no claw-back provisions in the event of the seller's insolvency)
- Assets must not be encumbered
- Underlying exposure must meet pre-defined eligibility criteria (no active portfolio management)
- The pool of underlying exposure must be homogenous
- No securitization of securitizations
- Regulatory creditworthiness requirements and origination in the ordinary course of the lender's or originator's business—material changes shall be disclosed
- No underlying exposure can be in default at the time of transfer in accordance with art. 178 (1) CRR
- At least one payment must have been made (exceptions for certain asset types)
- Repayment shall not depend on the sale of assets

Transparency involves increased disclosure of information relevant to the transaction which, in turn, will enable investors to make more decisions and mitigate the contagion effect arising from misinformation.

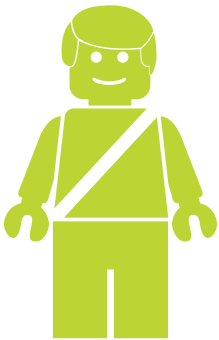
- Historical loan-level static and performance data must be provided at the time of pricing; this must cover at least three years for trade receivables and other short-term receivables and five years for all other exposure provided by the originator, sponsor or SSPE
- Provision of historical default and loss performance data—at least
 - Seven years for non-retail exposure;
 - Five years for retail exposure
- External verification of data on underlying exposure prior to issuance (pool audits) with a confidence level of 95 percent
- Provision of liability-cash flow models to investors
- Originator's sponsor and SSPEs shall make all required information available for potential investors such as drafts of the transaction documents

Standardization facilitates greater commoditization of securitization through easier comparability between transaction issues:

- In the same asset class;



- By the same issuer.



Standardization covers transaction documents, structural features, and definitions of performance:

- The originator, sponsor or original lender shall meet the regulatory risk retention requirement
- Interest and currency risks arising from the securitization shall be mitigated
- Interest rates shall be based on generally used market interest rates (no complex formulae or derivatives)
- No reverse waterfall structures
- The transaction documentation shall clearly specify the obligations and responsibilities of the servicer and provisions for the replacement of counterparties and liquidity providers. Policies, procedures, and risk management controls shall be well documented, as shall definitions, remedies, and actions relating to delinquent and defaulting debtors
- Voting rights will be clearly defined

“As a heterogeneous asset class, securitization stands to benefit from a framework allowing investors, regulators, and other participants (such as central banks lending against securitizations as collateral) to distinguish between deals on an objective, consistent basis. Greater standardization can also contribute to better liquidity in the secondary market.”

IMF, 2015



2.10.4. Hierarchy of rating approaches under the securitization framework

The CRR follows the BSBS framework closely by ranking the Securitization Internal Ratings-Based Approach (SEC-IRBA) as the primary credit risk calculation approach, followed by the External Ratings-Based Approach (SEC-ERBA) and Standardized Approach (SA). To use SEC-IRBA, a bank needs supervisory approval of the IRB model for the type of exposure in the securitization pool and sufficient information to estimate KIRB (the exposure-weighted average capital charge of the underlying pool had the exposure not been securitized). An institution that cannot calculate KIRB for a given vehicle will be required to use the External Ratings-Based Approach for the calculation of the risk-weighted exposure amounts. Under the SEC-ERBA, risk weightings are assigned based on credit assessments or inferred ratings, the seniority of the tranche, and the granularity of the securitization pool. A bank that cannot use SEC-ERBA must apply the Standardized Approach. If an institution cannot use SEC-IRBA, SEC-ERBA or SEC-SA for a given securitization exposure, it shall apply a risk weight of 1,250 percent.

Figure 12: Hierarchy of rating approaches



• Internal Ratings-Based Approach

The SEC-IRBA uses the Simplified Supervisory Formula Approach (SSFA) and the capital requirement depends on the level of credit enhancement, KIRB, the tranche thickness and the supervisory parameter (p) as key inputs. Tranche thickness is measured using tranche attachment point (A) and tranche detachment point (D).

• **KIRB** is the exposure-weighted average capital charge of the underlying pool. The capital charge includes the expected loss portion and, where applicable, dilution risk. The capital charge is calculated in accordance with the applicable minimum IRB standards under the BCBS framework, assuming that the underlying exposure in the securitization pool is held directly by the bank⁷.

• Tranche attachment point (A)

represents the threshold at which losses within the underlying pool would first be allocated to the securitization exposure. It is expressed in a decimal value between zero and one and is the ratio of:

- i. The outstanding balance of all underlying assets in the securitization vehicle, minus the balance of all tranches that rank senior or pari passu to the tranche that contains the bank’s securitization exposure (including the exposure itself), to
- ii. The outstanding balance of all underlying assets in the securitization vehicle.

• Tranche detachment point (D)

represents the threshold at which the losses within the underlying pool result in a total loss of principal for the tranche in which a securitization exposure resides. It is expressed as a decimal value between zero and one and is the ratio of:

- iii. The outstanding balance on all underlying assets in the securitization minus the outstanding balance of all tranches that rank senior to the tranche that contains the bank’s securitization exposure, to
- iv. The outstanding balance of all underlying assets in the securitization vehicle.

Overcollateralization and funded reserve accounts must be recognized as tranches and the assets forming these reserve accounts must be recognized as underlying assets for the calculation of A and D. However, only the loss-absorbing part of the funded reserve accounts that provide credit enhancement can be recognized as tranches and underlying assets. Unfunded reserve accounts (e.g., unrealized excess spread) and assets that do not provide credit enhancement such as pure liquidity support, currency or interest-rate swaps, or cash collateral accounts related to these instruments, must not be included in the calculation of A and D.

• Supervisory parameter (p)

determines the overall level of capital required for the portion of tranches above securitization exposure that absorbs losses up to the amount of capital that would be required if the underlying exposure were held directly by the bank. If the underlying IRB pool consists of both retail and wholesale exposure, the collateral pool should be divided into one retail and one wholesale sub-pool. A separate p-parameter should be calculated for each sub-pool and subsequently a weighted average p-parameter shall be calculated on the basis of the p-parameters of each sub-pool and the nominal size of the exposure in each sub-pool.

7. **KIRB** must also include the unexpected loss and the expected loss with defaulted exposure in the underlying pool. The scaling factor of 1.06 referenced in paragraph 44 of the Basel II framework is applied to the unexpected loss portion of the **KIRB** calculation.

The supervisory parameter p in the context of the SEC-IRBA is as follows:

Non-STC/STC securitizations:

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

STC/STC-compliant securitizations:

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

where:

- 0.3 denotes the p -parameter floor
- N is the effective number of loans in the underlying pool (as calculated below)
- K_{IRB} is the capital charge of the underlying pool
- LGD is the exposure-weighted average loss given default of the underlying pool (as calculated below)
- M_T is the maturity of the tranche, (as calculated below)
- Parameters A , B , C , D , and E are determined according to the look-up table in Fig. 12.

Figure 13: Look-up values for parameters A , B , C , D , and E

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

“One of the most appealing features of securitization as a technology is its flexibility. It can be used on granular assets such as residential mortgages where many thousands of individual mortgages can sit within a deal. It can also be used to finance non-granular assets such as commercial real estate, where deals might only be underpinned by 10 loans or fewer.”

Financial Times

Calculation of tranche maturity (M_T)

Tranche maturity is the tranche's remaining effective maturity in years and it can be measured at the bank's discretion:

01. On the basis of the weighted average maturity of the contractual cash flows of the tranche:

$$M_T = \sum_t t * CF_t / \sum_t CF_t$$

where CF_t denotes the cash flows (principal, interest payments, and fees) contractually payable by the borrower in period t .

The contractual payments must be unconditional and must not be dependent on the actual performance of the securitized exposure. The final legal maturity of the tranche shall be used if contractual payment dates are not available.

02. On the basis of the final legal maturity of the tranche as follows:

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

where M_L is the final legal maturity of the tranche.

Tranche maturity under (01) and (02) has a floor of one year and a cap of five years. For credit protection instruments that are only exposed to loss events that occur prior to the maturity of the particular instrument, a bank would be allowed to apply the contractual maturity of the instrument and would not have to look through to the protected position.

Calculation of effective number of sources of exposure (N)

The effective number of sources of exposure is calculated as follows:

$$N = (\sum_i EAD_i)^2 / \sum_i EAD_i^2$$

where EAD_i represents the exposure-at-default associated with the i th instrument in the pool. Multiple sources of exposure to

the same obligor must be consolidated (i.e., treated as a single instrument).

Calculation of exposure-weighted average LGD

The exposure-weighted average **LGD** (regular method) is calculated as follows:

$$LGD = \sum_i LGD_i * EAD_i / \sum_i EAD_i$$

where LGD_i represents the average **LGD** associated with all exposure to the i th obligor.

If the portfolio share associated with the largest exposure is up to 0.03 (or 3 percent of the underlying pool), banks can employ a simplified method for calculating **N** and **LGD**:

$$N = [(C_1 * C_m) + ((C_m - C_1) / (m - 1)) * \max\{1 - m * C_1, 0\}]^{-1}$$

where C_m is the share of the pool corresponding to the sum of the largest m exposure and C_1 is the portfolio share of the largest exposure. For the purpose of SEC-IRBA, the level of m is set by each bank and the bank may set **LGD** as 0.5. If only C_1 is available and this amount is no more than 0.03, then the bank may set the **LGD** as 0.50 and **N** as $1/C_1$.

Calculation of risk weight

The formula proposed under SEC-IRBA for calculating capital requirements per unit of securitization exposure is as follows:

$$K_{SSFA}(K_{IRB}) = (e^{a+u} - e^{a+1} / a(u-1))$$

where the constant e is the base of the natural logarithms (which equals 2.71828). The variables a , u and l are defined as follows:

- $a = -(1 / p * K_{IRB})$
- $u = D - K_{IRB}$
- $l = \max.(A - K_{IRB}; 0)$

Next, the risk weight assigned to a particular source of securitization exposure will be calculated as follows:

- When D for a securitization exposure is less than or equal to K_{IRB} , the exposure must be assigned a risk weight of 1,250 percent.
- When A for a securitization exposure is greater than or equal to K_{IRB} , the risk weight of the exposure, expressed as a percentage, would equal $K_{SSFA} (K_{IRB})$ multiplied by 12.5.
- When A is less than K_{IRB} and D is greater than K_{IRB} , the applicable risk weight is a weighted average of 1,250 percent and 12.5 multiplied by $K_{SSFA} (K_{IRB})$ according to the following formula:

$$\text{Risk weight} = \left[\left(\frac{K_{IRB} - A}{D - A} \right) * 12.5 \right] + \left[\left(\frac{D - K_{IRB}}{D - A} \right) * 12.5 * K_{SSFA} (K_{IRB}) \right]$$

The resulting risk weight is subject to a floor of 15 percent.

External Ratings-Based Approach

Under SEC-ERBA, risk-weighted assets will be determined by multiplying securitization exposure amounts by the appropriate risk weights. To apply SEC-ERBA, the operational criteria for using external credit assessments or for inferred ratings must be met⁸. For exposure with short-term ratings, or when an inferred rating based on a short-term rating is available, the prescribed risk weights apply.

The following tables provide the prescribed SEC-ERBA risk weights for short-term ratings for non-STC/STS securitization and STS/STC-compliant securitizations.

Figure 14: SEC-ERBA risk weights for short-term non-STC/STS securitizations

| External credit assessment | Risk weight |
|----------------------------|-------------|
| A-1/P-1 | 15% |
| A-2/P-2 | 50% |
| A-3/P-3 | 100% |
| All other ratings | 1,25% |

Figure 15: SEC-ERBA risk weights for short-term STC/STS securitizations

| External credit assessment | Risk weight |
|----------------------------|-------------|
| A-1/P-1 | 15% |
| A-2/P-2 | 50% |
| A-3/P-3 | 100% |
| All other ratings | 1,25% |



8. The operational requirements for SEC-ERBA are set out in paragraphs 71 to 73 of the BCBS securitization framework.

For exposure with a long-term rating, or when an inferred rating based on a long-term rating is available, the risk weights depend on four factors:



The external rating or inferred rating;



The seniority of the position;



The tranche maturity;



The tranche thickness, in the case of non-senior tranches

Figure 16 provides the prescribed SEC-ERBA risk weights for long-term ratings for non-STC/STC securitization and STC/STC-compliant securitizations.

The risk weights assigned to a securitization exposure when SEC-ERBA is applied are calculated as follows:

- To account for tranche maturity, banks shall use linear interpolation between the risk weights for one and five years
- To account for tranche thickness, banks shall calculate the risk weight for non-senior tranches as follows:

Figure 16: SEC-ERBA risk weights for long-term non-STC/STC securitizations

| Rating | Senior tranche | | Non-senior (thin) tranche | |
|---------------|------------------|-------------------|---------------------------|-------------------|
| | Maturity: 1 year | Maturity: 5 years | Maturity: 1 year | Maturity: 5 years |
| AAA | 15% | 20% | 15% | 70% |
| AA+ | 15% | 30% | 15% | 90% |
| AA | 25% | 40% | 30% | 120% |
| AA- | 30% | 45% | 40% | 140% |
| A+ | 40% | 50% | 60% | 160% |
| A | 50% | 65% | 80% | 180% |
| A- | 60% | 70% | 120% | 210% |
| BBB+ | 75% | 90% | 170% | 260% |
| BBB | 90% | 105% | 220% | 310% |
| BBB- | 120% | 140% | 330% | 420% |
| BB+ | 140% | 160% | 470% | 580% |
| BB | 160% | 180% | 620% | 760% |
| BB- | 200% | 225% | 750% | 860% |
| B+ | 250% | 280% | 900% | 950% |
| B | 310% | 340% | 1,05% | 1,05% |
| B- | 380% | 420% | 1,13% | 1,13% |
| CCG+/CCC/CCC- | 460% | 505% | 1,25% | 1,25% |
| Below CCC- | 1,25% | 1,25% | 1,25% | 1,25% |

$$\text{Risk weight} = [\text{risk weight from table after adjusting for maturity}] * [1 - \min(T; 50\%)]$$

where T equals tranche thickness, and is measured as D – A, as defined above.

No granularity adjustments are applied, as the BCBS believes that the external credit rating agencies already account for granularity when assigning a rating to a tranche. The requirement for having at least two eligible ratings is no longer applicable.

“When operating efficiently, securitization supports economic growth and financial stability by enabling issuers and investors to diversify and manage risk.

By transforming a pool of illiquid assets into tradable securities, securitization frees up bank capital, allowing banks to extend new credit to the real economy, and supports the transmission of monetary policy”

IMF

• **Standardized Approach**

To calculate capital requirements for securitization exposure to a pool using the Standardized Approach, a bank will use a supervisory formula and the following bank-supplied inputs:

- The standardized approach capital charge had the underlying exposure not been securitized (K_{SA}). K_{SA} is defined as the weighted average capital charge of the entire underlying securitization pool, calculated using the risk-weighted asset amounts in the SA multiplied by 8 percent. A provision or non-refundable purchase price discount on exposure in the securitization pool must be excluded from the K_{SA} calculation. K_{SA} is expressed as a decimal between zero and one (i.e., a weighted average risk weight of 100 percent would mean that K_{SA} would equal 0.08)
- The ratio of delinquent underlying exposure to total underlying exposure in the securitization pool (W). Delinquent underlying exposure is underlying exposure that is 90 days or more past due, subject to bankruptcy or

insolvency proceedings, in the process of foreclosure, held as real estate owned, or in default, where default is defined within the securitization transaction documents

- The tranche attachment point (A) and the tranche detachment point (D) as defined under SEC-IRBA. Where the only difference between sources of exposure to a transaction is related to maturity, A and D will be the same

For structures involving an SSPE, all of the SSPE's exposure related to the securitization shall be treated as exposure to the securitization pool. Exposure related to the securitization that should be treated as exposure to the pool include assets in which the SSPE may have invested such as reserve accounts, cash collateral accounts, and claims against counterparties resulting from interest swaps or currency swaps.

Calculation of risk weight

The inputs K_{SA} and W are used as inputs to calculate K_A :

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



If the bank does not know the delinquency status for up to 5 percent of underlying exposure in the pool, SEC-SA may still be used to calculate the capital requirements for each unit of securitization exposure by adjusting the K_A calculation as follows:

$$K_A = \left(\frac{EAD_{\text{Subpool 1 where } W \text{ known}}}{EAD \text{ Total}} * K_{A \text{ Subpool where } W \text{ known}} \right) + \frac{EAD_{\text{Subpool 2 where } W \text{ unknown}}}{EAD \text{ Total}}$$

If a bank does not know the delinquency status for more than 5 percent of the underlying exposure pool, the securitization exposure must be weighted at 1,250 percent.

The supervisory parameter in the context of SEC-SA equal 1 (or 0.5 for STS/STC-compliant securitization) for securitization exposure that is not resecuritization exposure. Capital requirements are calculated under the SEC-SA as follows:

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

- where $K_{SSFA}(K_A)$ is the capital requirement per unit of securitization exposure and the constant e is the base of the natural logarithms (which equals 2.71828). The variables a , u , and l are defined as follows:
- $a = -(1 / p * K_A)$
- $u = D - K_A$
- $l = \max. (A - K_A; 0)$

The risk weight assigned to securitization exposure under SEC-SA is calculated as follows:

- When D for a particular source of securitization exposure is less than or equal to K_A , the exposure must be assigned a risk weight of 1,250 percent
- When A for a particular source of securitization exposure is greater than or equal to K_{IRB} , the risk weight of the exposure, expressed as a percentage, would equal $K_{SSFA}(K_A)$ multiplied by 12.5
- When A is less than K_A and D is greater than K_A , the applicable risk weight is a weighted average of 1,250 percent and 12.5 multiplied by $K_{SSFA}(K_A)$ according to the following formula:

$$\text{Risk weight} = \left[\left(\frac{K_A - A}{D - A} \right) * 12.5 \right] + \left[\left(\frac{D - K_A}{D - A} \right) * 12.5 * K_{SSFA}(K_A) \right]$$

The risk weight for market risk hedges such as currency or interest rate swaps will be inferred from a source of securitization exposure that is pari passu to the swaps or, if such exposure does not exist, from the next subordinated tranche. The resulting risk weight is subject to a floor of 15 percent. When a bank applies SA to an unrated junior exposure in a transaction where the more senior tranches are rated and therefore no rating can be inferred for the junior exposure, the resulting risk weight under SA for the junior unrated exposure shall not be lower than the risk weight for the next more senior exposure.

2.10.5. Maximum capital requirements

For a mixed pool, K_p equals the exposure-weighted capital charge of the underlying pool using K_{SA} for the proportion of the underlying exposure pool for which the bank is unable to calculate K_{IRB} , and K_{IRB} for the proportion of the underlying pool for which the bank can calculate K_{IRB} .

2.10.6. Caps for securitization exposure

A bank may apply a “look-through” approach to senior securitization exposure, whereby the senior securitization exposure could receive a maximum risk weight equal to the exposure-weighted average risk weight to the underlying exposure. A prerequisite for applying this approach is that the bank must be aware of the composition of the underlying exposure at all times⁹. The applicable risk weight under IRBA would be calculated applying the 1.06 scaling factor and would also be inclusive of the expected loss portion multiplied by 12.5:

- In the case of securitization pools where the bank exclusively uses the SA or IRB approach, the risk weight cap for senior exposure would equal the exposure weighted-average risk weight that would apply to the underlying exposure under the SA or IRB credit risk framework, respectively
- In the case of mixed pools, when applying SEC-IRBA, the SA part of the underlying securitization pool will receive the corresponding SA risk weight, while the IRB portion will be attributed the IRB risk weights. The risk weight cap for senior exposure would be based on the SA exposure weight-average risk weight of the underlying assets, whether or not they are originally IRB, when SEC-SA is applied

2.10.7. Capital treatment of resecuritization exposure

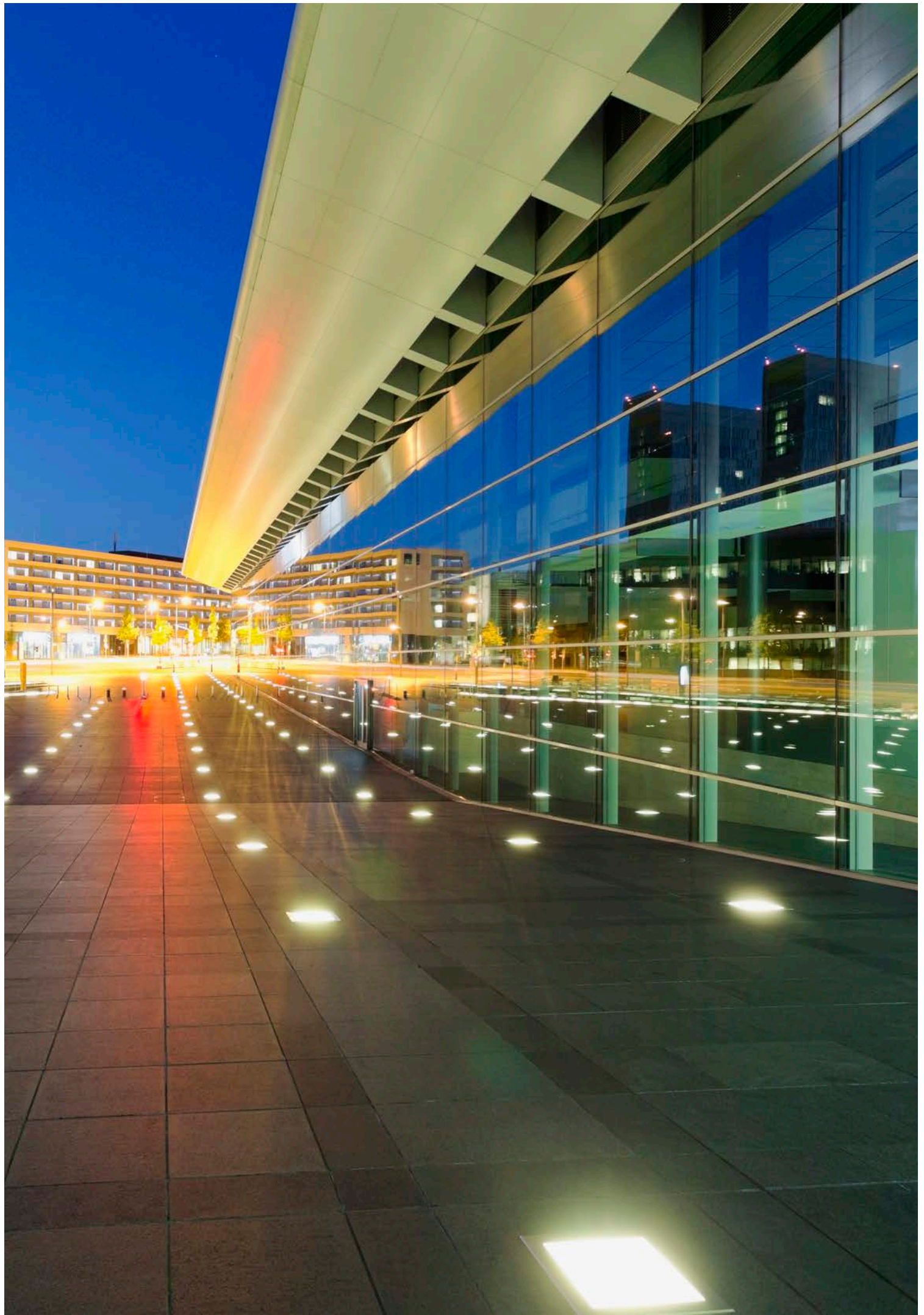
For resecuritization exposure, a bank must apply SEC-SA with the following adjustments:

- The capital requirement associated with the underlying securitization exposure is calculated using the securitization framework
- Delinquencies (W) are assumed to be zero for any securitization exposure to a tranche in the underlying pool
- The supervisory parameter p is set at 1.5, rather than 1 as for securitization exposure

Risk weights and capital requirement caps defined for securitizations are not applicable to resecuritization exposure. If the underlying pool of a resecuritization vehicle consists in a pool of exposure to securitization tranches and their assets, securitization tranches are separated from exposure to assets that are not securitization vehicles. A separate K_A parameter should be calculated for each subset (including a separate W parameter) and the K_A for the portfolio is calculated as the nominal exposure weighted average of the K_A for each subset considered. The resulting risk weight is subject to a floor risk of 100 percent.

9. Taking in account the scaling factor of 1.06 under the SEC-IRBA





3. Luxembourg securitization

At the heart of Europe and securitization

Luxembourg is a prime venue for securitization in Europe. It hosts 25 percent of all European securitization transactions and it is the domicile for more than 900 securitization vehicles .

3.1. The Luxembourg securitization framework

The Securitization Law and the law of 10 August 1915, as amended, (the “Company Law”) allow the use of regulated and non-regulated vehicles for the securitization of a wide range of assets including trade receivables, loans, tangible and intangibles assets, shares, and any other activity with a reasonably ascertainable value or predictable future revenue streams.

Luxembourg securitization vehicles are unregulated entities and not subject to authorization or supervision by the Luxembourg regulator, the Commission de Surveillance du Secteur Financier (“CSSF”), unless shares or bonds are issued: (i) to the public, and (ii) on a continuous basis (more than three times per year)¹⁰. These two conditions are cumulative¹¹.

The Securitization Law requires that the assets (e.g., real assets, loans, claims, rights, etc.) are transferred by a third party to the securitization vehicle. A Luxembourg securitization vehicle therefore cannot be used to originate assets (such as new loans). However, a third party (such as a loan-originating debt fund) can continuously generate new assets and subsequently transfer them to the securitization vehicle. The role of the securitization vehicle is limited to the administration (collection and distribution) of financial flows linked to the securitization transaction itself and to the prudent management of the securitized assets.

¹⁰ Securitization funds are always subject to authorization and supervision by the CSSF.

¹¹ On 23 October 2013, the Luxembourg supervisory authority (“CSSF”) issued Frequently Asked Questions (“FAQs”) on securitization.

3.2. Benefits of Luxembourg securitization

Aside from the well-known benefits of securitization, such as lower regulatory capital requirements for banks and insurance companies, portfolio diversification, capital market access, and efficient refinancing and restructuring, the Luxembourg securitization framework offers a range of additional advantages to originators, sponsors, and investors.

3.2.1. Legal and regulatory framework Segregation of assets and liabilities

To ensure the appropriate segregation of assets and liabilities, a Luxembourg securitization vehicle can create one or more compartments (for securitization companies) or sub-funds (for securitization funds) corresponding to a distinct part of the securitization vehicle's assets. For this to occur, the constitutional documents (articles of association or the management regulation) of the securitization vehicle must foresee the creation of multiple compartments/sub-funds. The decision to set up compartments/sub-funds is taken by the board of directors and can be made at any time throughout the entire life of the securitization vehicle.

Each compartment or sub-fund can issue notes against a single asset/claim or a portfolio of assets/claims. The rights/claims of investors/creditors relating to a specific compartment or sub-fund will be limited to the assets thereof, which will be exclusively available to cover such rights/claims. As with investors, each compartment or sub-fund shall be treated as a separate entity, unless otherwise stipulated in the constitutional documents of the securitization vehicle. Consequently, compartments or sub-funds do not contaminate each other if the assets underperform.

Bankruptcy remoteness

The Securitization Law recognizes the validity and enforceability of: (i) the contractual subordination of claims, (ii) the non-petition agreement (whereby investors and creditors waive their rights to initiate insolvency or bankruptcy proceedings against the securitization vehicle), and (iii) the noteholders' limited right of recourse with respect to the securitization vehicle (the scope of the noteholders' right of recourse is limited to the assets of the relevant compartment/sub-fund only).

Enforcement of pledges

As with the Securitization Law and the Company Law, the Luxembourg law relating to financial collateral arrangements dated 5 August 2005 as amended on 20 May 2011 (the "Collateral Law") should be viewed as creditor-friendly legislation aimed at facilitating and accelerating the enforcement of collateral arrangements (e.g., share and asset pledges) including those over credit claims.

3.2.2. Taxation

Securitization companies are fully subject to Luxembourg corporate income tax and municipal business tax. Payments and commitments made to investors and to other creditors are, however, fully deductible. The law expressly states that—for tax purposes—payments made by such companies are always treated as interest, even when made in the form of a dividend, leading to a significant reduction in their taxable basis. No withholding tax is due on these payments. From 1 January 2016, securitization companies are subject to a minimum net worth tax ranging from €535 to €32,100 per year (depending on the assets held). They are otherwise not subject to net worth tax.

In principle, as fully taxable resident companies, securitization companies have access to double taxation treaties concluded by Luxembourg with other countries, as well as EU directives. Upon request, they can obtain a tax residence certificate from the Luxembourg tax authorities.

Securitization funds are assimilated with transparent investment funds for Luxembourg tax purposes. They are not subject to corporate taxes or net wealth tax and theoretically do not have access to European directives or double taxation treaties. Investors are taxed according to the rules applicable in their country of residence. No subscription tax is payable by securitization funds.

As long as they do not have the effect of transferring rights related to immoveable property located in Luxembourg or to aircraft, ships or riverboats recorded on a public register in Luxembourg, agreements entered into in the context of a securitization transaction and all other instruments relating to such a transaction should not be subject to registration formalities, even when referred to in a public deed or produced in court or before any other public authority.

Finally, one of the most attractive tax aspects is the VAT exemption from which a securitization fund may benefit with respect to management services.

3.2.3. Investment policy

A wide range of assets/rights can be securitized under the Luxembourg Securitization Law. These include:

- Trade receivables, e.g., credit card receivables, rental income
- Performing and non-performing loans, e.g., commercial and residential real estate, automotive, shipping, aircraft and infrastructure/project finance
- Tangible and intangibles assets, e.g., commodities, art, royalties
- Liquid and illiquid financial instruments, e.g., shares, bonds, illiquid hedge fund positions, PE participations
- Any activity with a reasonably ascertainable value or predictable future revenue streams

Securitized risks may also result from obligations assumed by third parties or inherent to the activities of third parties.

3.2.4. Authorization and supervision

Only securitization companies issuing securities (equity or debt): (i) on a continuous or revolving basis, and (ii) to the public are subject to the supervision of the CSSF.

Figure 17: Benefits of Luxembourg securitization



“One of the most appealing features of securitization as a technology is its flexibility. It can be used on granular assets such as residential mortgages where many thousands of individual mortgages can sit within a deal. It can also be used to finance non-granular assets such as commercial real estate, where deals might only be underpinned by 10 loans or fewer.”

Financial Times, August 2017

3.3. The Luxembourg stock exchange

Securitization vehicles in Luxembourg have access to the Luxembourg stock exchange, which operates two markets: the Bourse de Luxembourg and the Euro Multilateral Trading Facility ("Euro-MTF") market. The Luxembourg stock exchange features more than 40,000 listed and tradeable securities, of which more than 3,500 Asset-backed Securities ("ABS") are listed¹². Other noteworthy statistics about the Luxembourg stock exchange are summarized in Figure 18.

Figure 18: Benefits of Luxembourg securitization

99%

of all securities listed in less than two days

650+

different issuers of ABS listed

37

jurisdictions from which ABS issuers originate

50+

different currencies

500+

Medium-Term Note (MTN) programmes

3.4. Securitization vehicles

Luxembourg securitization vehicles can take two forms: a corporate form or a securitization fund.

3.4.1. Creation and legal form

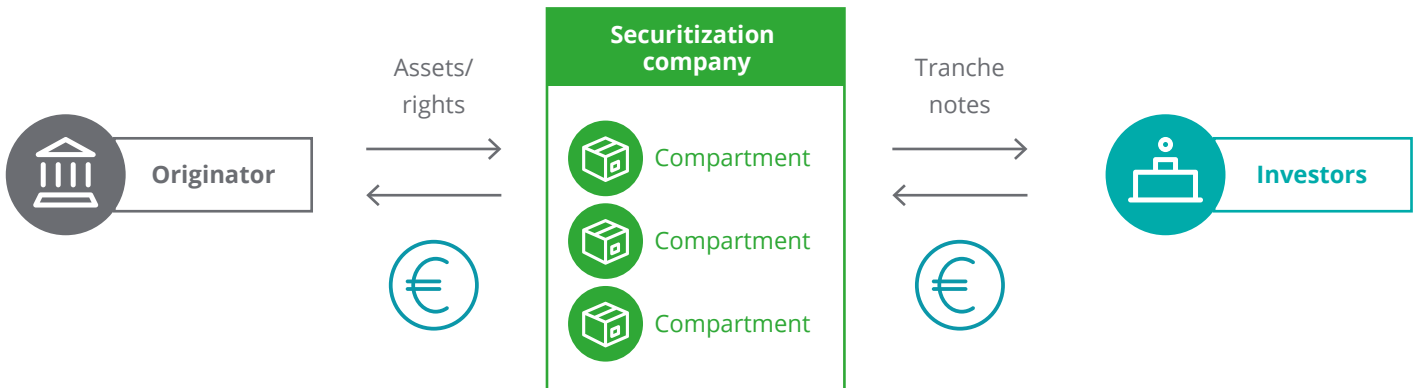
The constitutional documents (articles of incorporation, statutes) of a securitization vehicle that takes the form of a corporate entity (a "securitization company") must specifically refer to the Luxembourg

Securitization Law to qualify as a Luxembourg securitization vehicle. A securitization company can take the following corporate forms:

- A public limited liability company (société anonyme or "SA")
- A partnership limited by shares (société en commandite par actions or "SCA")
- A private limited liability company (société à responsabilité limitée or "Sàrl")
- A cooperative organized as a public limited company (société cooperative organisée sous forme de société anonyme or "SCSA")

12. Listing Asset-Backed Securities at the Luxembourg Stock Exchange, Luxembourg Stock Exchange.

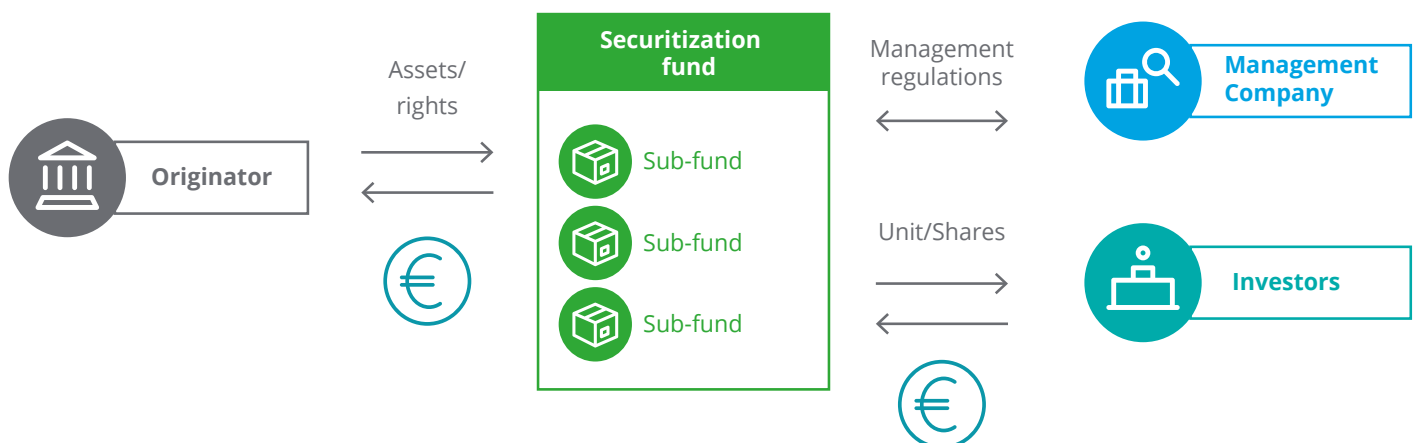
Figure 19: Securitization company



A securitization company only needs to meet the minimum capital requirement applicable to its corporate form (i.e., SA/SCA: €31,000, Sàrl: €12,500, no minimum capital requirement for an SCSA but the capital referred to in the articles of incorporation must be subscribed upon incorporation). This requirement must be met at the company level, not by each individual compartment.

A securitization company can be set up as an orphan structure, e.g., the shareholders of the company are Dutch private foundations (Stichtings). In such cases, the securitization company would not be regarded as a subsidiary of the originator and consolidation may be avoided (depending on local GAAP). Foundations are administrated by a management board that is responsible for fulfilling the purpose of the foundation as defined by its articles of association.

Figure 20: Securitization fund



A securitization fund takes the form of a stand-alone fund, a fonds commun de placement (co-ownership) or a fiduciary trust, managed by a management company whose registered office must be located in Luxembourg. The management regulations must specifically refer to the Securitization Law for the vehicle to qualify as a Luxembourg securitization fund.

3.4.2. Compartments and sub-funds

A securitization company can create several compartments and a securitization fund can create multiple sub-funds within one structure. Compartmentalization allows for the segregation of the assets and liabilities across multiple compartments, so that assets may be ringfenced on a compartment-by-compartment basis. Unless otherwise stipulated in the constitutional documents of the securitization company, the segregated compartments do not affect each other if assets underperform, as potential losses are borne by the noteholders and creditors of the various compartments. This means that the noteholders' and creditors' right of recourse can be limited on a compartment-by-compartment basis.

Compartmentalization allows for the segregation of the assets and liabilities across multiple compartments, so that assets may be ringfenced on a compartment-by-compartment basis.

To allow for compartmentalization, the articles of association of the securitization company should simply authorize the board of directors to create segregated compartments. Liquidation of one compartment does not affect the existence of any other compartment, or that of the securitization company itself.

Compartmentalization allows for the segregation of the assets and liabilities across multiple compartments, so that assets may be ringfenced on a compartment-by-compartment basis.

3.5. Authorization and supervision

Only securitization companies issuing securities (equity or debt): (i) on a continuous or revolving basis, and (ii) to the public are subject to the supervision of the CSSF. In terms of the definition of public issuance, the CSSF has issued the following guidelines¹³:

- Securities issued to professional clients within the meaning of Annex II to the MiFID Directive (2004/39/EC) are not considered by the CSSF as issues to the public for the purpose of the Securitization Law
- Securities issued with a denomination equal to or exceeding €125,000 each are deemed not to have been issued to the public
- the listing of securities on a regulated or alternative market does not constitute *ipso facto* as an issue to the public
- Private placements, irrespective of their denominations, are also not considered to be issues to the public; the classification to be attributed to private placements is assessed on a case-by-case basis by the CSSF. The subscription of securities by an institutional investor or financial intermediary with a view to a subsequent placement of such securities with the public does constitute a placement with the public for the purpose of the Securitization Law

Luxembourg securitization vehicles are generally not subject to the EU directive on alternative investment fund managers ("AIFMD"). However, the securitization vehicles that must comply with the provisions of AIFMD are¹⁴:

- Securitization vehicles acting as first lender, i.e., originating new loans
- Securitization vehicles issuing securities offering synthetic exposure to non-credit related assets and undertaking the transfer of credit risk only as an accessory activity

3.6. Accounting

Luxembourg securitization companies must comply with the provision of Section XII of the Law of 10 August 1915 on commercial companies, as amended, and with the provisions of Chapters II and IV of Title II of the Law of 19 December 2002 on the trade and companies register and the accounting and annual accounts of companies ("the Accounting Law"). The Accounting Law allows the application of Luxembourg Generally Accepted Accounting Principles ("Lux GAAP") as well as the use of International Financial Reporting Standards ("IFRS"):

- Lux GAAP: historical cost/fair value option
- IFRS: fair value

In the event that a Luxembourg securitization vehicle is set up with multiple compartments, a breakdown of assets and liabilities as well as profit and loss statements per compartment must be prepared in addition to consolidated financial statements.

The accounting and tax regulations applicable to a securitization fund managed by a management company and governed by management regulations is the Accounting Law. However, this does not apply to:

- The content and layout of the annual report
- Asset valuation, which will follow the mark-to-market model set out in the *Law of 17 December 2010 on Undertakings for Collective Investments*, as amended (the "UCI Law"). Thus, the following two options are available:
 - (i) Lux GAAP: mark-to-market
 - (ii) IFRS

3.7. Reporting obligations

Under the Securitization Law, both regulated and unregulated securitization vehicles must comply with the following circulars of the Luxembourg Central Bank (Banque centrale du Luxembourg—"BCL") that implement ECB regulations and guidelines and set out reporting obligations:

- (i) **Guideline ECB/2011/23** of 9 December 2011, on the statistical reporting requirements of the ECB in the field of external statistics
- (ii) **Regulation ECB/2012/24** of 17 October 2012 concerning statistics on holdings of securities
- (iii) **Guideline ECB/2013/24** dated 25 July 2013 on the statistical reporting requirements by the ECB in the field of quarterly financial accounts
- (iv) **Regulation ECB/2013/40** of 18 October 2013 concerning statistics on the assets and liabilities of financial vehicle corporations engaged in securitization transactions
- (v) **BCL circular 2014/236** dated 25 April 2014 on statistical data collection by securitization vehicles, which replaces and repeals (i) BCL circular 2009/224 dated 8 June 2009, and (ii) BCL circular 2013/232 dated 20 June 2013, and sets out the initial registration requirements applicable to Luxembourg securitization vehicles and their continuous periodic reporting obligations

13. Question no. 4, Frequently Asked Questions Securitization, Commission de Surveillance du Secteur Financier, 23 October 2013.

14. Question No. 19, Frequently Asked Questions Securitization, Commission de Surveillance du Secteur Financier, 23 October 2013.

Every securitization vehicle falling within the scope of the reporting population as defined by *BCL circular 2009/224* dated 8 June 2009 (implementing *ECB Regulation ECB/2008/30* dated 19 December 2008) must submit the following information to the BCL at the time of the initial registration:

- The nature of the securitization vehicle
- The International Securities Identification Numbers ("ISINs") of financial instruments issued by the securitization vehicle
- Information about the reporting agent (i.e., the entity that submits the data)
- Information about the management company, if applicable

If a registration is amended or cancelled, the securitization vehicle will submit the following to the BCL¹⁵:

- All information regarding the registration amendment
- The closure/liquidation date if the securitization vehicle is closed or liquidated

This must occur as soon as the total assets of a securitization vehicle vary to such an extent that it could change its situation regarding reporting obligations.

The ongoing reporting obligations that apply to securitization vehicles are:

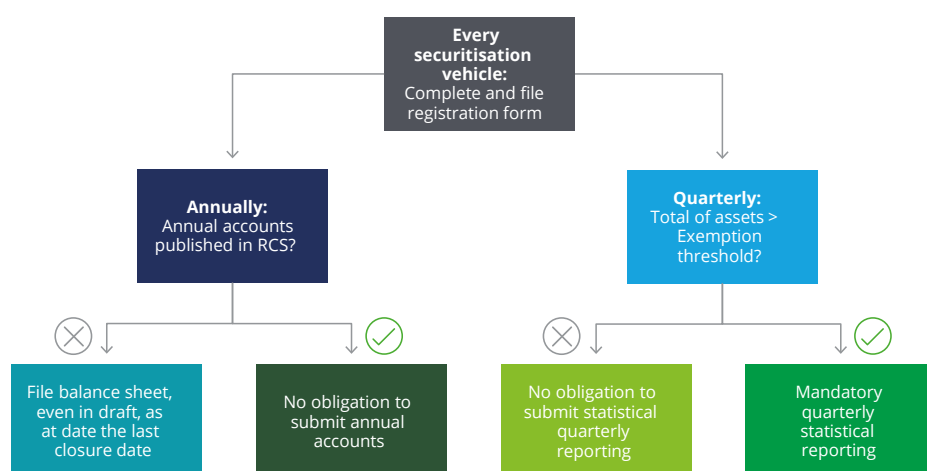
- Initial notification: any securitization vehicle whose quarterly total balance sheet exceeds €500 million or the equivalent in a foreign currency shall inform the BCL of this by submitting its most recent annual accounts, if available, within one month of this threshold being passed¹⁶

- Quarterly statistical balance sheet of securitization vehicles: a report must be provided to the BCL on a quarterly basis no later than 20 working days after the end of the period to which it relates (the "S 2.14 Report")
- Transactions and write-offs/write-downs on securitized loans of securitization vehicles: a report must be provided to the BCL on a quarterly basis no later than 20 working days after the end of the period to which it relates (the "S 2.15 Report")
- Security by security reporting of securitization vehicles: a report must be provided to the BCL no later than 20 working days after the month-end to which it relates (the "SBS Report")

BCL circular ST.13-0993, dated 9 December 2013, lowers the exemption threshold below which a securitization vehicle is exempt from all statistical reporting obligations, apart from the obligation to produce end-of-quarter reports on outstanding amounts in relation to total assets, from a total of EUR 100 million to EUR 70 million on the balance sheet¹⁷.

BCL circular ST.16-0557, dated 24 May 2016, implemented *ECB Decision ECB/2015/50* of 18 December 2015 (amending Decision ECB/2010/10 on non-compliance with statistical reporting requirements. Since 1 July 2016, the ECB and the BCL have monitored reporting agents' compliance with the minimum standards required to meet their reporting obligations. All failures to meet the minimum requirements will be recorded in a database and sanctions may be imposed by the BCL. More serious misconduct will also be recorded so that the ECB may impose sanctions. BCL reporting obligations aside, securitization vehicles entering into derivatives contracts fall within the scope of *EU Regulation 648/2012* of 4 July 2012 on over-the-counter ("OTC") derivatives, central counterparties and trade repositories, also known as the European Market Infrastructure Regulation ("EMIR")¹⁸.

Figure 21: Overview of BCL reporting obligations



15. Statistical reporting of securitization vehicles—Frequently Asked Questions (FAQ), Banque Centrale du Luxembourg, June 2013.

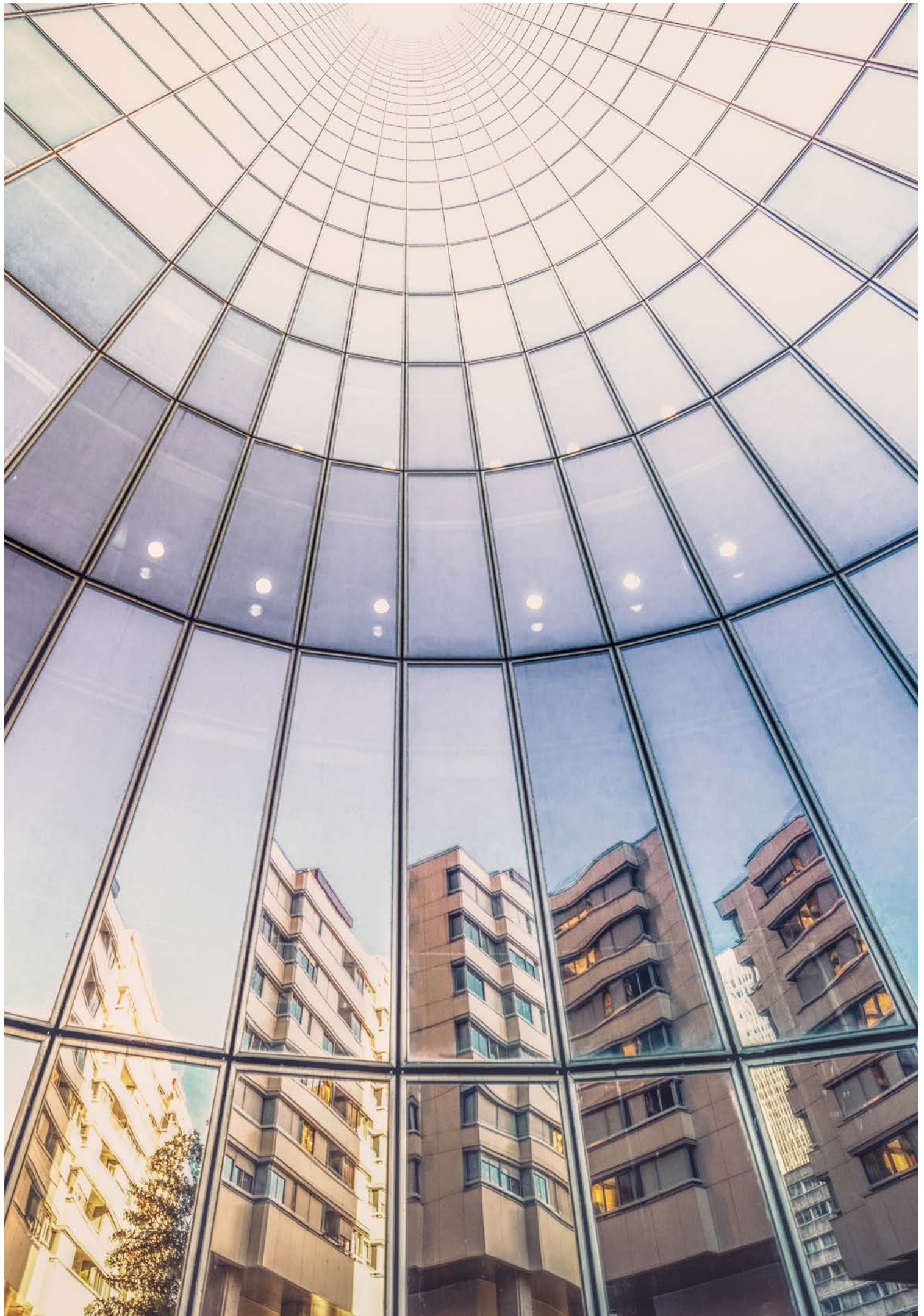
16. The BCL reserves the right to impose specific reporting obligations on securitization vehicles with a balance sheet falling below the threshold.

17. The exemption threshold is determined at the level of the securitization vehicle as a whole and not on a compartment-by-compartment basis for multi-compartment structures.

18. The CSSF confirmed in its *press release no. 13/26* dated 24 June 2013 that securitization vehicles are also covered as non-financial counterparties and may thus be subject to the reporting and risk mitigation obligations under EMIR.

“As a heterogeneous asset class, securitization stands to benefit from a framework allowing investors, regulators, and other participants (such as central banks lending against securitizations as collateral) to distinguish between deals on an objective, consistent basis. Greater standardization can also contribute to better liquidity in the secondary market.”

IMF



4. Structuring scenarios

A flexible legal framework and opportunities to create multiple compartments within one legal entity make Luxembourg a highly appealing location for securitized loan portfolios.

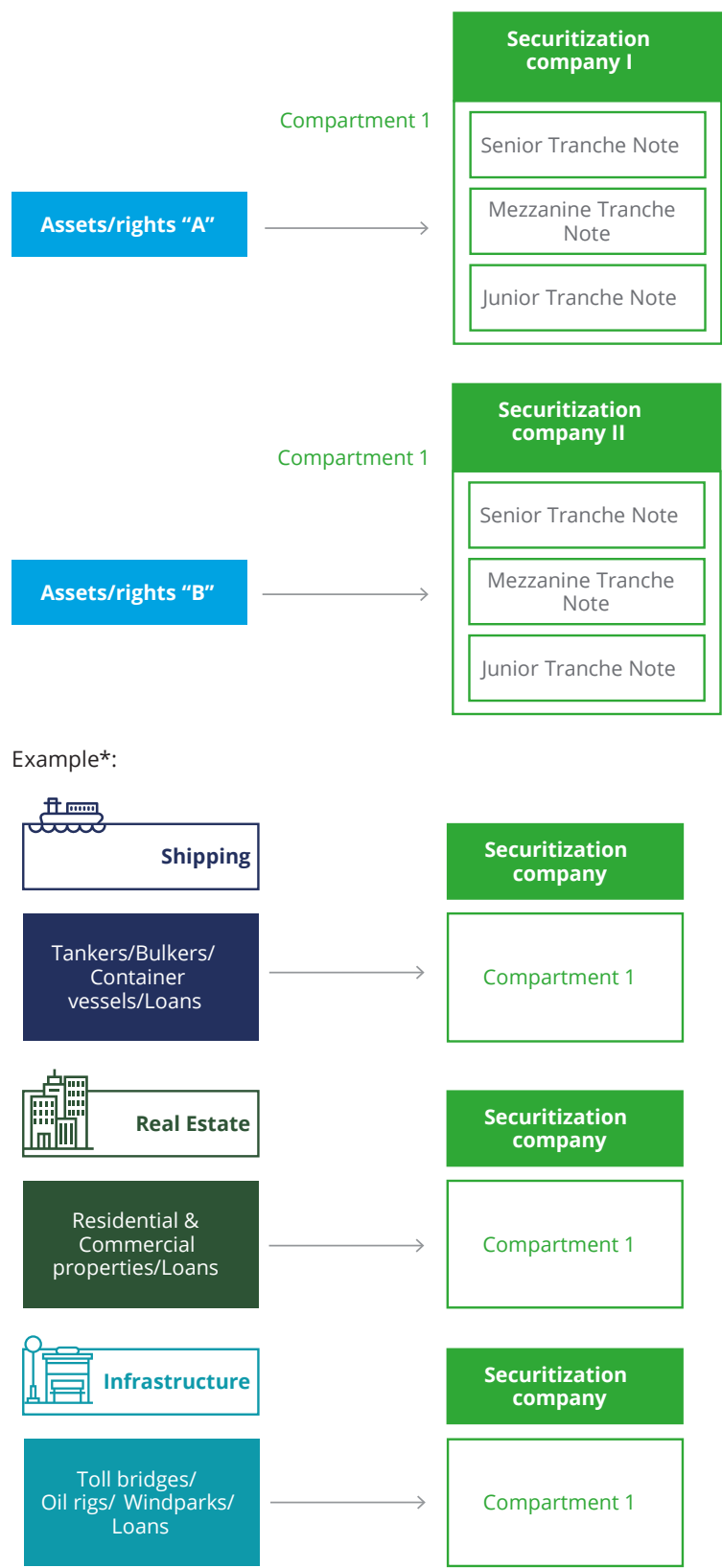
4.1. Structuring scenarios

In this section, Deloitte is proud to present a series of case studies to illustrate the advantages of the structural features of Luxembourg securitization vehicles, the unique securitization scenario of non-performing loans, and the use of double taxation treaties to ensure tax-efficient structuring.

4.1.1. Compartmentalization and tranching

In the most basic scenario, sponsors, arrangers, and originators of securitization vehicles can set up a Luxembourg securitization vehicle with only one compartment or sub-fund that holds a portfolio of mostly homogenous assets or rights. Such securitization vehicles are typically automotive loans and lease ABS, CMBS, RMBS and credit card receivable ABS. The Securitization Law also provides a highly attractive and flexible regulatory framework by allowing a combination of multi-compartment structures and tranching to tailor securitization transactions to the specific objectives and requirements of originators, arrangers, sponsors, guarantors, and investors. A typical structure is created by pooling assets and rights within the same asset class in compartments. The securitization vehicle can then issue series of tranches to investors (Figure 22).

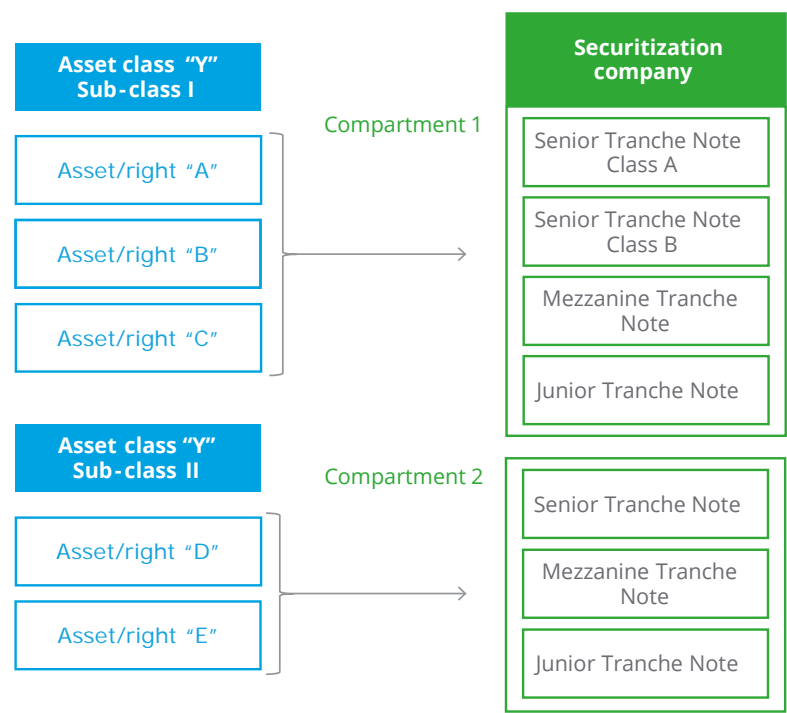
Figure 22: Pooling approach 1



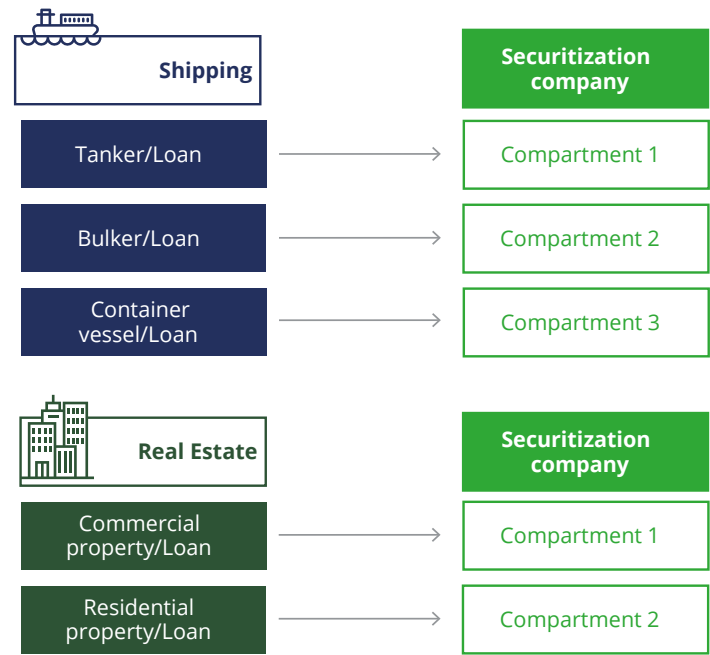
* For reference purposes only

A second approach is to set up a securitization vehicle with multiple compartments where each asset sub-class is allocated to a dedicated compartment. Asset sub-classes can be categorized by geographical region (e.g., prime or secondary real estate) or industry segments (e.g., tanker, dry bulk, and container for shipping) (Figure 23).

Figure 23: Pooling approach 2

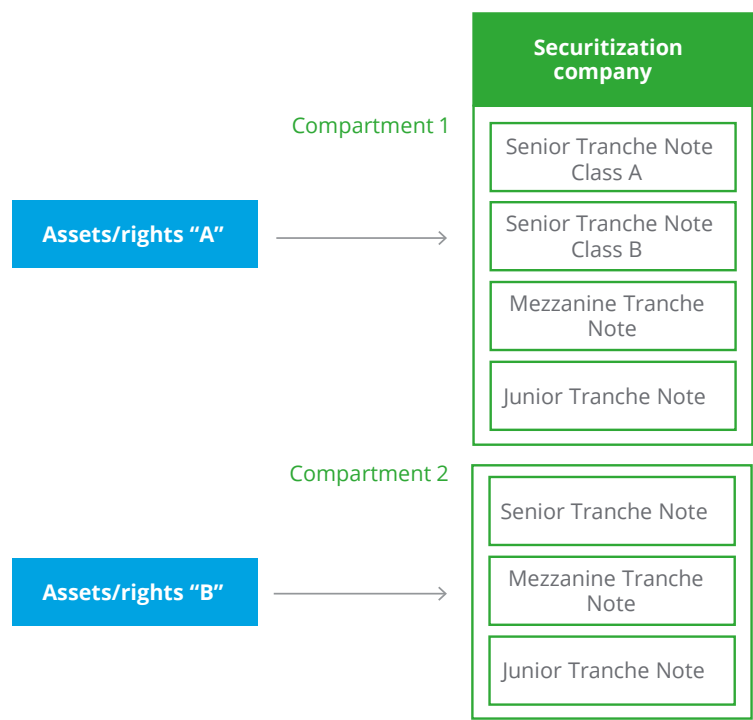


Example*:

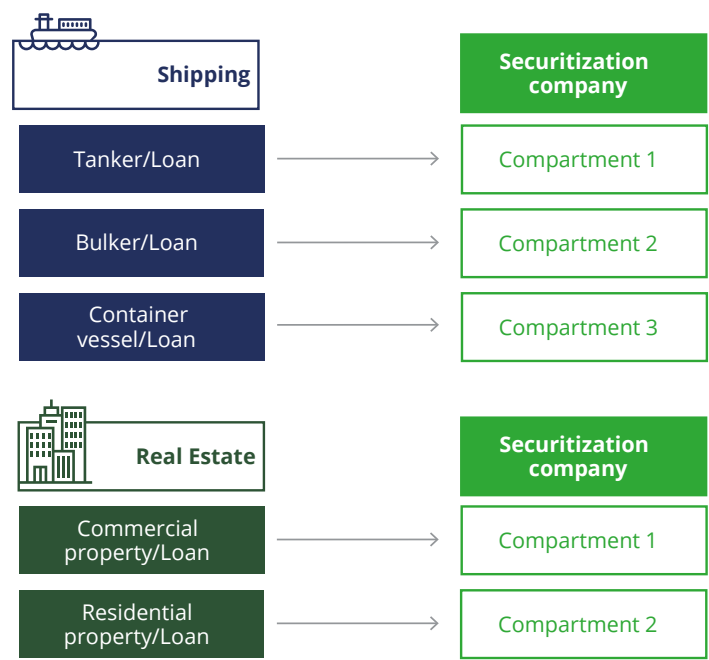


Another option is to set up a multi-compartment structure within one legal entity whereby each compartment only acquires a single asset or right (e.g., loan) within one asset class (e.g., infrastructure, real estate, shipping, aviation) and issues tranches of securities against this specific asset or right to investors (Figure 24).

Figure 24: Single asset/right securitization



Example*:

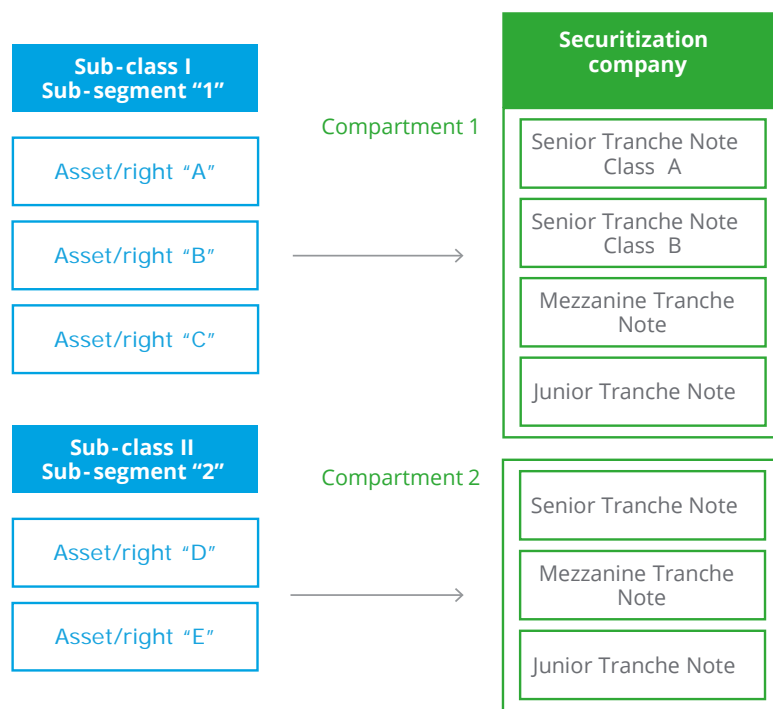


* For reference purposes only

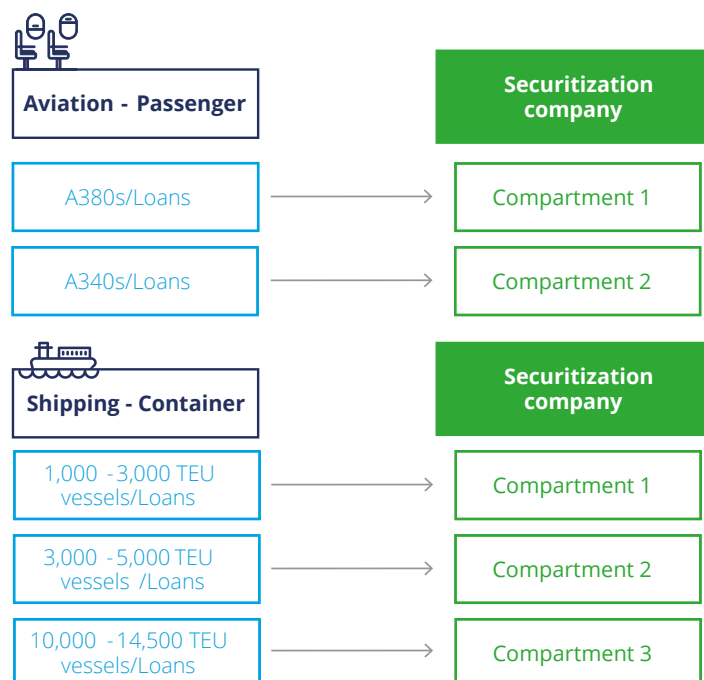
Luxembourg securitization structures can also be set up at a more granular level, which can help originators, sponsors, and arrangers to attract investors to specific industry sub-segments. The benefit to investors is that they can build portfolios with different risk and return profiles by investing in tranches with different seniority rankings from several compartments.

The pooling approach at sub-segment level can allow for a unique index-based securitization structure of performing and non-performing exposure (loans). Such index-based securitization structures can provide additional return to investors when economic/industry conditions improve (for a detailed explanation, please see the “Securitization of non-performing loans” section below).

Figure 25:



Example*:

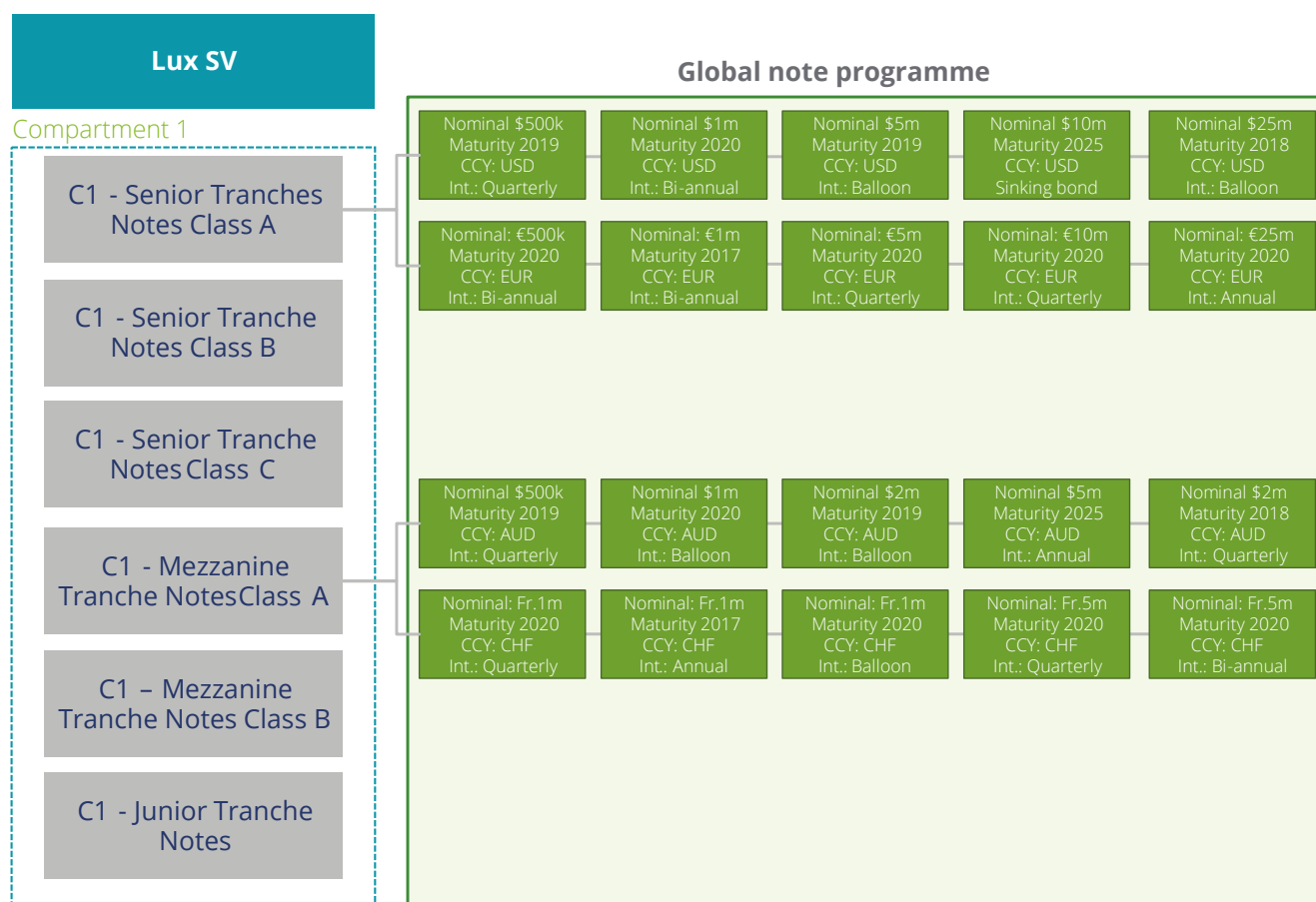


* For reference purposes only

4.1.2. Global note program

Securitization through a regulated or non-regulated Luxembourg securitization company allows stakeholders to benefit from a note program. Such a program can be designed to issue bonds/notes on a continuous basis (with varying maturities, interest rates, interest payment frequencies, and currencies) to informed investors or the public, while avoiding the repeated duplication of extensive and costly legal documentation (e.g. offering memorandum, pledge agreement, etc.) for each individual issue.

Figure 26: Example of a global note program*



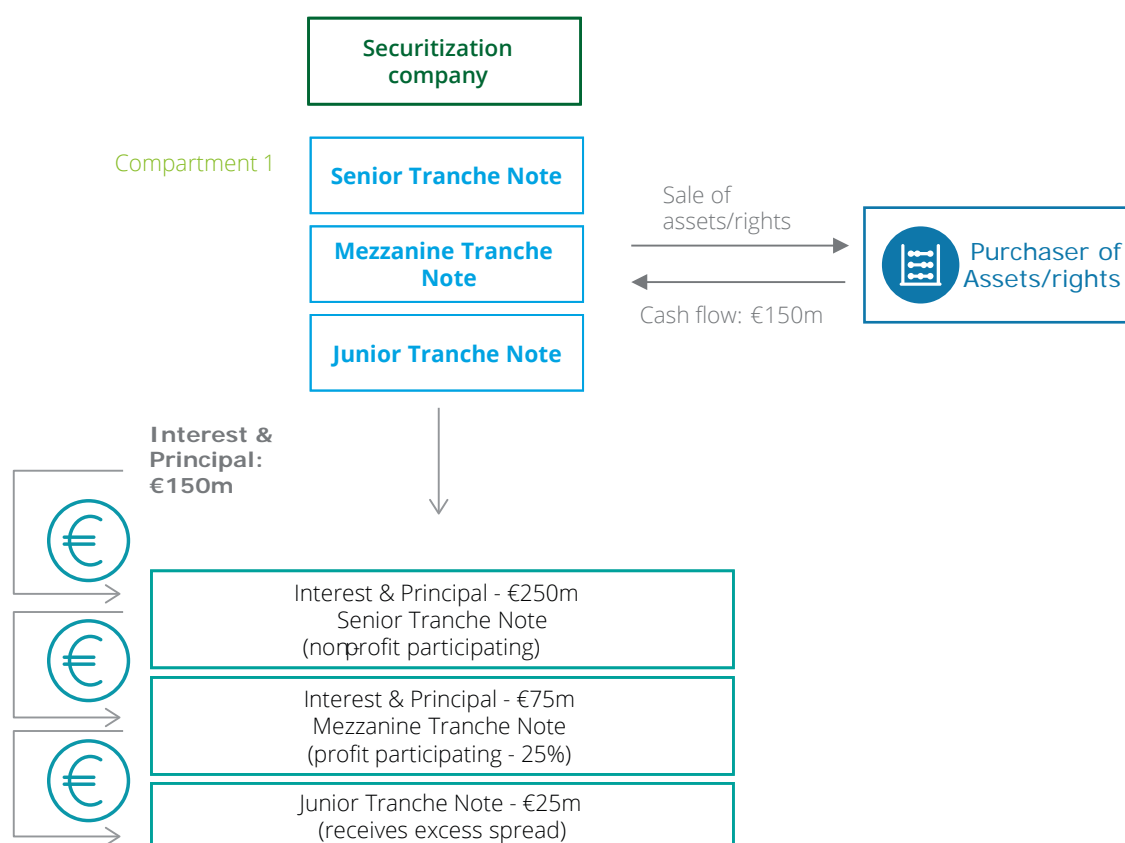
* For reference purposes only

4.1.3. Redemption of notes and profit participation

The reference portfolio of assets or rights against which notes are issued does not have to be static provided that the condition of passive management is fulfilled. Depending on the terms and conditions of the notes and market sentiment, individual or multiple assets or rights within the reference pool may be sold on the secondary market. Should: (i) an attractive offer be received by the SSPE and no suitable assets or rights be found to replenish the collateral pool (e.g., for CLO structures), or (ii) the terms and conditions

of the offering memorandum not permit the replenishment of the reference portfolio, then cash proceeds can be: a) retained by the Luxembourg SSPE until the notes mature and/or b) distributed to noteholders through early partial redemptions of the notes in accordance with the waterfall structure (Figure 27) (subject to the terms and conditions of the offering memorandum or noteholders' approval).

Figure 27: Sale of assets/rights and early partial redemption of notes*



* For reference purposes only

Profit participating notes can provide additional returns to investors if economic/ industry conditions improve, or when cash flow from the underlying reference portfolio exceeds expectations. The terms and conditions set out in the initial documentation may therefore clearly impose (with or without noteholders’

approval) profit participation upon various note tranches when the securitization transaction is created (Figure 28). Assuming that assets or rights outperform expected returns or can be disposed of at a profit, Luxembourg SSPEs can make cash payments to profit participating noteholders in accordance with the terms

and conditions set out in the offering memorandum. In addition, notes can be redeemed in part or in full in accordance with the waterfall structure.

Figure 28: Set up of the SSPE*

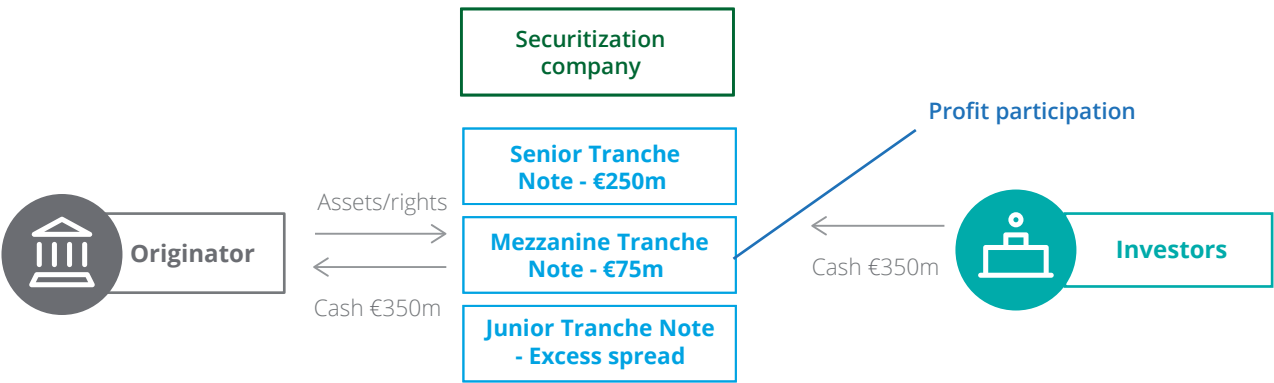
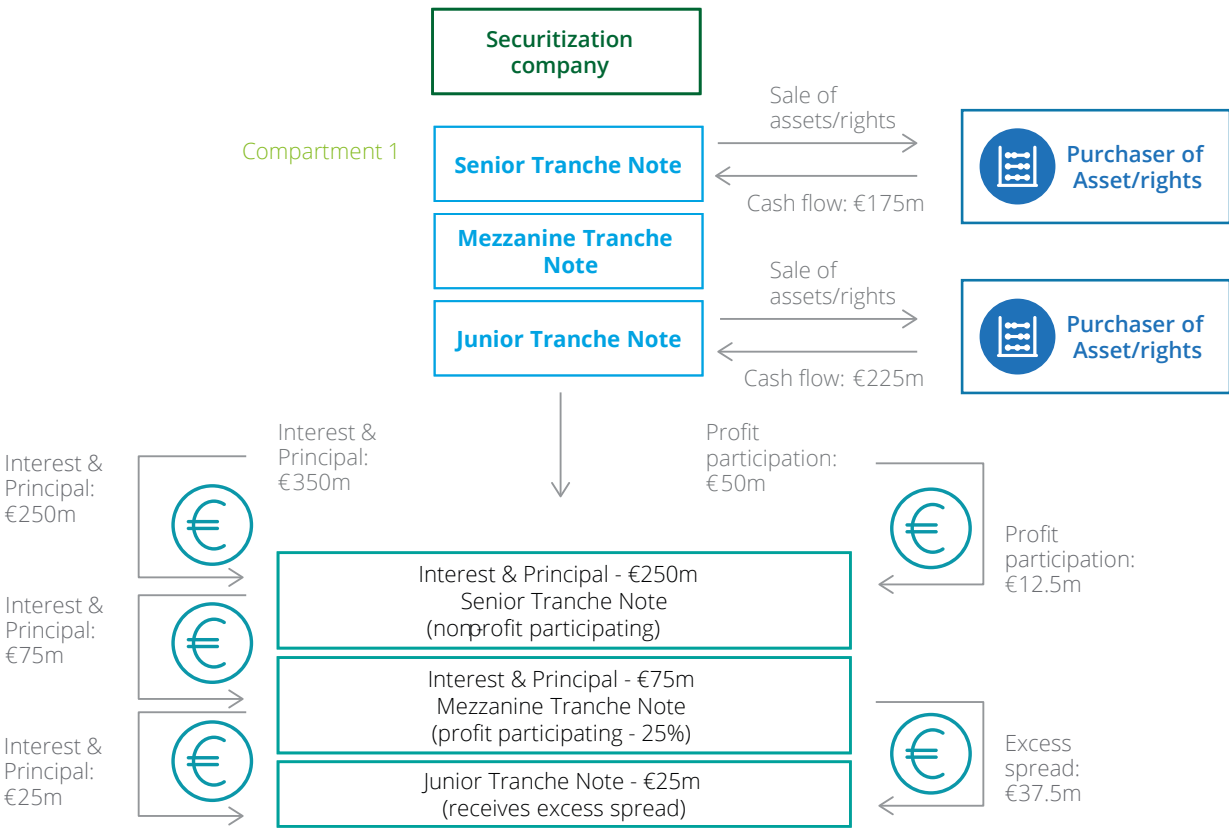


Figure 28: Sale of assets/rights and profit participation



* For reference purposes only

4.1.4. Securitization of non-performing loans (NPLs)

Europe's largest banks hold approximately €950 billion of NPLs (7.1 percent of total loans or the equivalent of 9 percent of the eurozone's GDP) on their balance sheets according to the latest financial stability review by the ECB¹⁹. As NPL levels in Europe are higher than in other major developed countries such as the US or Japan and they impair the ability of banks to lend to the economy, deliberate and sustainable reductions of NPLs has been a major concern to the EBA, ECB, and the European Parliament²⁰.

The ECB carried out a comprehensive assessment in 2014 to ensure that European banks were adequately capitalized and able to withstand possible financial shocks. The first pillar of this comprehensive assessment was an Asset Quality Review (AQR) and the second pillar was a stress test. The objective of the AQR and stress test in 2014 has often been mistakenly interpreted as being to act as catalysts in the NPL deleveraging process²¹. Instead, the objective of the AQR was to enhance the transparency of bank exposure, including the adequacy of asset and collateral valuation and related provisions, whereas the stress test evaluated the resilience of banks' balance sheets to economic shocks.

Because of the AQR and stress test, European banks have improved their common equity tier 1 (CET1) ratio, but NPL levels remain high by historical standards. To deal with NPLs, national agencies, bad banks, and platforms have been set up. The mandate and roles of such national agencies include winding up NPLs through sales transactions to the capital market. While banks are often hesitant to offload their NPL portfolios at highly discounted prices to potential buyers, national agencies such as the Irish National Asset Management Agency (NAMA), the Spanish *Sociedad de Gestión de Activos procedentes de la Reestructuración Bancaria* (Sareb) and the German *Erste Abwicklungsanstalt* (EAA) have facilitated a series of sales.

As an alternative to an outright sale, the securitization of NPL portfolios can help to:

- Restructure balance sheets
- Transfer economic and credit (counterparty) risk to the capital market
- Potentially avoid significant losses crystallizing upon sale
- Enable banks, national agencies (originators), and investors to participate in higher than expected loan recovery rates and a revived economic/industry environment

NPL securitization can be appealing, as improvements in the general economic or industry-/asset-specific environment can be shared by originators (if they become investors in the securitization tranches, e.g., through a partially retained deal) and prospective investors through profit-participating notes issued by a Luxembourg SSPE. Following the sale of an NPL portfolio to a Luxembourg SSPE, the new terms and conditions of the consensually restructured loans may stipulate that borrowers must make unscheduled loan principal repayments to recover some of the potential losses that materialize at the level of banks or national agencies upon sale of the restructured loans to the SSPE ("Performance component 1").

The trigger for the unscheduled repayments of loan principal may be linked to recognized indices. These indices might be specific to industry sub-segments or even the assets themselves²². As the index increases, so should the financial strength and cash flows from the borrowers.

Notably, and in contrast to a cash sweep used in restructuring and enforcement proceedings, the borrowers have additional headroom and are not required to operate at the minimum cash level. Once the unscheduled loan principal repayments have closed the "value gap" (e.g., 30 percent between the sales consideration to the SSPE (e.g., 70 percent) and the nominal value of the loan (100 percent)), scheduled loan principal repayments remain payable by the borrowers.

19. Financial Stability Review, European Central Bank, May 2016.

20. EBA Report on the Dynamics and Drivers of Non-Performing Exposures in the EU Banking Sector, European Banking Authority, 22 July 2016. Draft guidance to banks on non-performing loans, European Central Bank, September 2016. Non-performing loans in the Banking Union: stocktaking and challenges; European Parliament, 18 March 2016.

21. Challenges for the European banking authority, Lecture by Vítor Constâncio at the Conference on "European Banking Industry: what's next?" Madrid, 7 July 2016.

22. Indices from the shipping industry provide illustrative examples. Multiple indices for different shipping industry sub-segments (e.g., tanker, dry bulk, tanker) are available and vessel owners already use indices for hedging purposes (e.g., forward-freight agreements (FFA)). Shipping indices are also available at a more granular and asset-specific level. For example, the Baltic Dry Index (BDI) breaks down into the Baltic Capesize, Panamax, Supramax, and Handysize Index. Similarly, the Howe Robinson Container Index and the Container Ship Time Charter Assessment Index (New Contexts) by the Hamburg Shipbrokers' Association (VHSS) provide charter rates for different sizes of container vessels.

Figure 29: Securitization of NPLs*

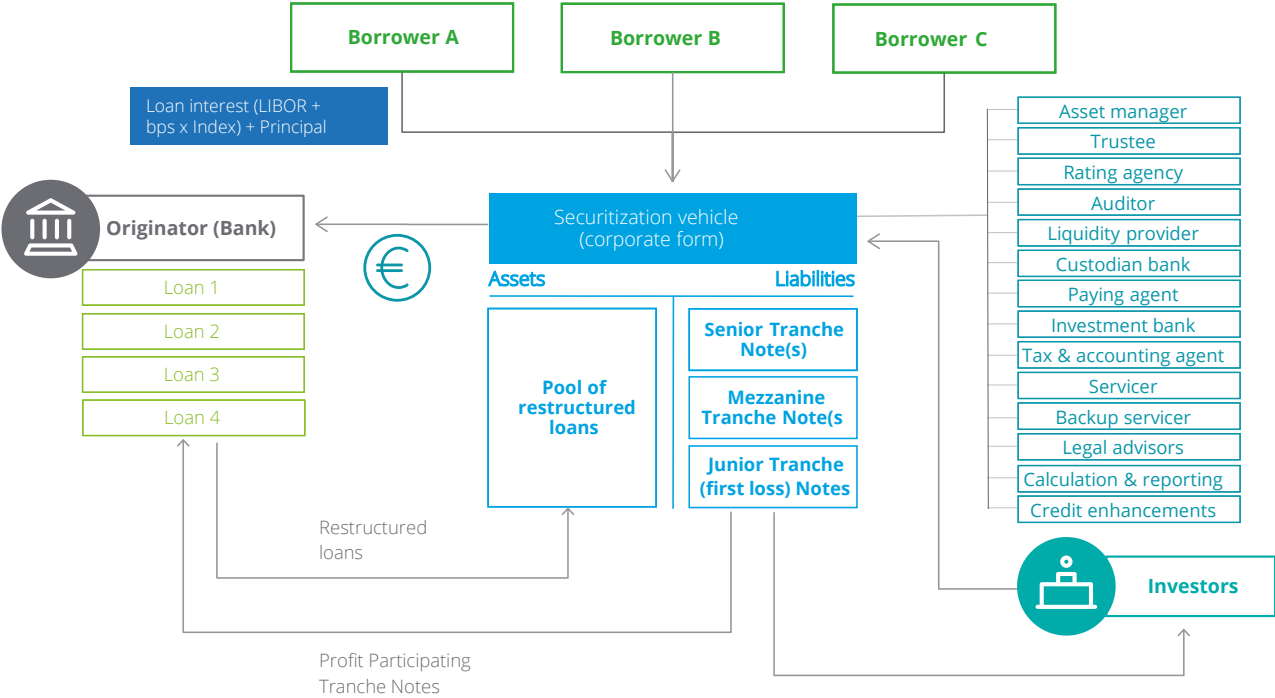
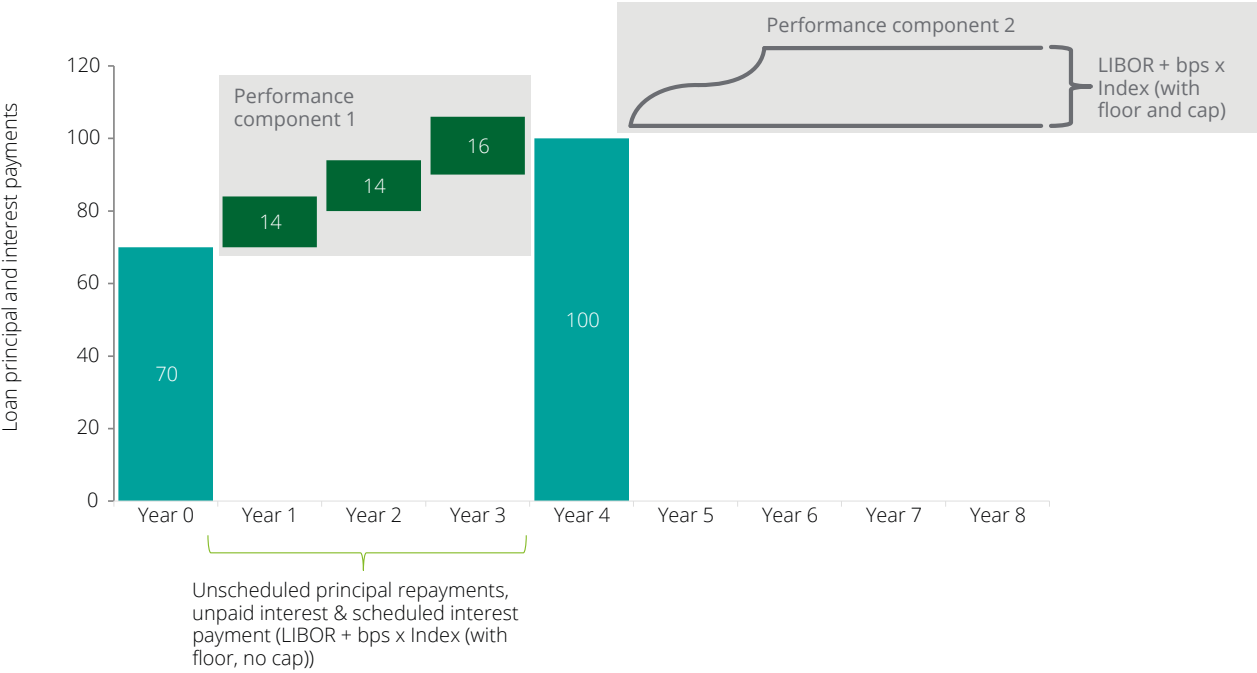


Figure 30: Securitization of NPLs—performance components*



* For reference purposes only

The future cash flow related to performance component 1 may also be structured as a deferred purchase price option (e.g., over a period of between three and five years), so that the originator (bank) is eligible to receive additional purchase price consideration from the SSPE when the relevant index attached to the loan(s) increases. Depending on local GAAP and subject to discussions with the auditor of the bank, the deferred purchase price option could be valued and capitalized (based on a projected index by a recognized third party, e.g., MSI for shipping). The bank and its auditor would need to have an annual discussion regarding the likelihood of the bank receiving part or all of the additional purchase price consideration and write-downs on the receivable might be needed. One possible benefit of such securitization structuring is therefore that the bank may not be required to recognize the full losses on the date of the sale of the NPL portfolio to the Luxembourg SSPE.

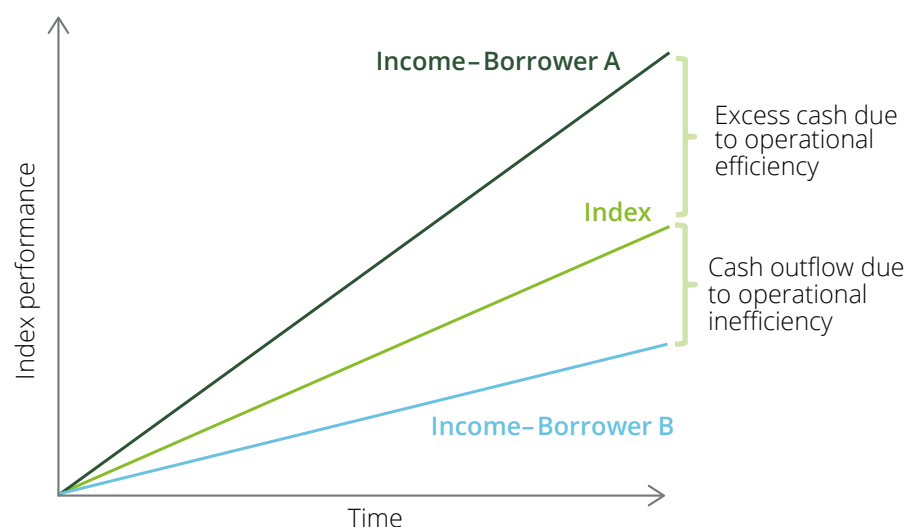
In addition to performance component 1, investors may also benefit from upturns in the general economic/industry environment by linking loan interest payments on the restructured loans to relevant indices (e.g., the same index as for performance component 1). Consequently, as the index increases, borrowers are required to make higher interest payments on the loan (performance component 2). To protect investors against a falling index and borrowers against onerous loan interest payments, an interest floor and cap can be set (e.g., floor: LIBOR + bps = min. 4 percent; cap: LIBOR + bps x index = max. 15 percent). Investors therefore have return profile that cannot fall below a certain threshold and borrowers know in advance the maximum interest payment amounts.

Another incentive for banks and borrowers to consider such NPL securitization structuring is that (long-standing) relationships are not broken. The bank can become a third-party loan monitoring and servicing agent of the Luxembourg SSPE through a service level agreement (SLA). This SLA could generate fee income for the bank as servicer of the loan and avoid staff redundancies. Other benefits of index-linked NPL securitization are:

- Borrowers are incentivized to outperform the reference index through improvements in their operating model (e.g., higher revenue, opex reduction, etc.). Borrowers outperforming the index can build up a cash reserve whereas borrowers underperforming the index are incentivized to review their business model and improve operational efficiency

- Cash flows linked to performance components 1 and 2 are classified as interest payments and not as dividends under the Luxembourg securitization framework. Consequently, no withholding tax is payable at the level of the Luxembourg securitization company
- The payoff profiles of the indexation performance components are similar to those of a call option and create value for investors. Such call options can be traded separately on the OTC market
- Investors can hedge/swap out LIBOR and only keep returns from the indexed performance components
- Loan can be stress tested via LIBOR and indexation for the IFRS 9 “Expected loan losses model” calculation

Figure 31: Securitization of NPLs—operational efficiency for borrowers



4.1.5. Run-off structure for illiquid assets

The nature of illiquid assets such as sub- or non-performing private equity investments and shares in gated hedge funds can pose significant realization challenges to banks, investment funds, asset managers, and liquidators.

For the wider PE market, “zombie” private equity funds have become a genuine concern, not only in terms of underperformance but also due to the reputational damage to the industry²³. These “living dead” funds retain their investments for longer than their scheduled holding periods and trap investors seeking to exit²⁴. This can result in disagreements and conflicts between GPs and LPs, with the former having little power to direct or intervene in the affairs of the investment vehicle or to wind-down structures through orderly and timely liquidation. Investors in zombie PE structures also face the risk of low recoveries if GPs realize investments to generate cash for management fees and not with returns to investors as their primary motive.

Another illiquid asset class warranting particular attention is gated hedge funds that are closed to redemption requests by investors. Although an active secondary market for illiquid hedge fund positions has emerged over recent years, pricing such assets remains notoriously difficult with sellers and buyers relying on a mixture of publicly available information (e.g., net assets per share statements, annual financial statements, etc.), private information (i.e., communication with the investment manager) and their own estimates regarding future cash distributions.

Besides the pricing conundrum, the illiquidity of such hedge fund positions can be amplified by restrictions on transferability. In the worst cases, transferability restrictions lead to lengthy liquidation periods or to those illiquid assets being “parked” indefinitely in investment fund “side pockets”. The resulting situation can then be similar to the effects of zombie funds, with potential recoveries (cash distributions) swamped by the running costs of the run-off holding structures.

“Zombie” private equity funds have become a genuine concern, not only in terms of underperformance but also due to the reputational damage to the industry.

One possible solution to transform illiquid private equity investments and shares in gated hedge funds into liquid securities and minimize the operating costs of run-off structures is through the use of a Luxembourg SSPE. The following five steps provide a high-level overview how such an illiquid securities run-off structure can be implemented:

23. A recent study provides a comprehensive and excellent overview on the zombie fund subject: Eidensen, M. and Erla, B. (2015), Private Equity Zombie Funds: Performance and Fund Characteristics, Master Thesis, Financial Economics, Norwegian School of Economics.

24. As of end of July 2015, Preqin estimated that there were 1,180 PE zombie funds globally, originally set up between 2003 and 2008, sat on unrealized assets of US\$127 billion.



Step 1: Preparation phase

Given that transferability restrictions may apply and the statutes or regulations of hedge funds may establish a “right of first refusal” before a portfolio security can be sold to a third party, discussions with the underlying hedge fund managers should be held at an early stage of the securitization process. A clear understanding of the purpose of the transaction (e.g., closure of liquidation proceedings, reducing investment-holding costs, etc.) and the structure of the run-off securitization vehicle is likely to be crucial in order to mitigate concerns by the underlying hedge fund managers. Timely discussions with the underlying hedge fund administrator regarding how the portfolio securities will be transferred/sold and the collection of the necessary documentation to perform the transaction (e.g., statement of holdings, net asset statements) can also increase execution speed during the securitization preparation phase.



Step 2: Set up of run-off structure

A dedicated Luxembourg SSPE is created to act as a holding structure for illiquid portfolio securities. The articles of association or the management regulations of the SSPE may require the creation of multiple compartments. The decision to set up compartments is taken by the board of directors and can be made at any time throughout the entire life of the securitization vehicle. Such compartments can be used to segregate assets and liabilities at the level of the Luxembourg securitization vehicle for various investments funds of the same group to transfer their illiquid portfolio securities. Multi-compartment SSPEs can also be attractive when several asset managers or stand-alone investment funds collaborate to set up a joint run-off structure for illiquid portfolio securities. Such run-off structures can lead to accelerated liquidations of the original investment holding structures (OIHSs) (e.g., investment funds, commercial companies, etc.), whilst the general fees and expenses of the securitization vehicle can be shared. To ensure cost transparency and avoid conflicts, the articles of association of the securitization vehicle can set out how general fees and expenses that are not related to a specific compartment are allocated (e.g., pro rata based on the net asset value of the compartments).



Step 3: Sale of assets to the run-off structure

The OIHSs (e.g., fund, banks) sell illiquid portfolio securities (e.g., hedge fund securities (HFS)) to compartments of the Luxembourg SSPE via an SPA. It is also possible for all known and unknown assets and liabilities of the initial investment structure to be contributed in kind to the Luxembourg run-off vehicle, but such transfers will probably require the advance approval of creditors.



Step 4: Issuance of tranche notes

In return for the assets sold, the OIHS receives note tranches from the Luxembourg SSPE. The tranching of the notes issued by the various compartments can mirror the OIHS's shareholder register on the liquidation opening date or on the date of the sale to the Luxembourg SSPE. For liquidating OIHSs, the note tranches issued by the securitization vehicle can be distributed to investors through an advance on or final liquidation bonus in kind. It should be noted that such advances on or final liquidation bonuses in cash or in kind are not subject to withholding tax at the level of the liquidating Luxembourg

In summary, the key benefits to original investors of using Luxembourg securitization vehicles as run-off structures are:

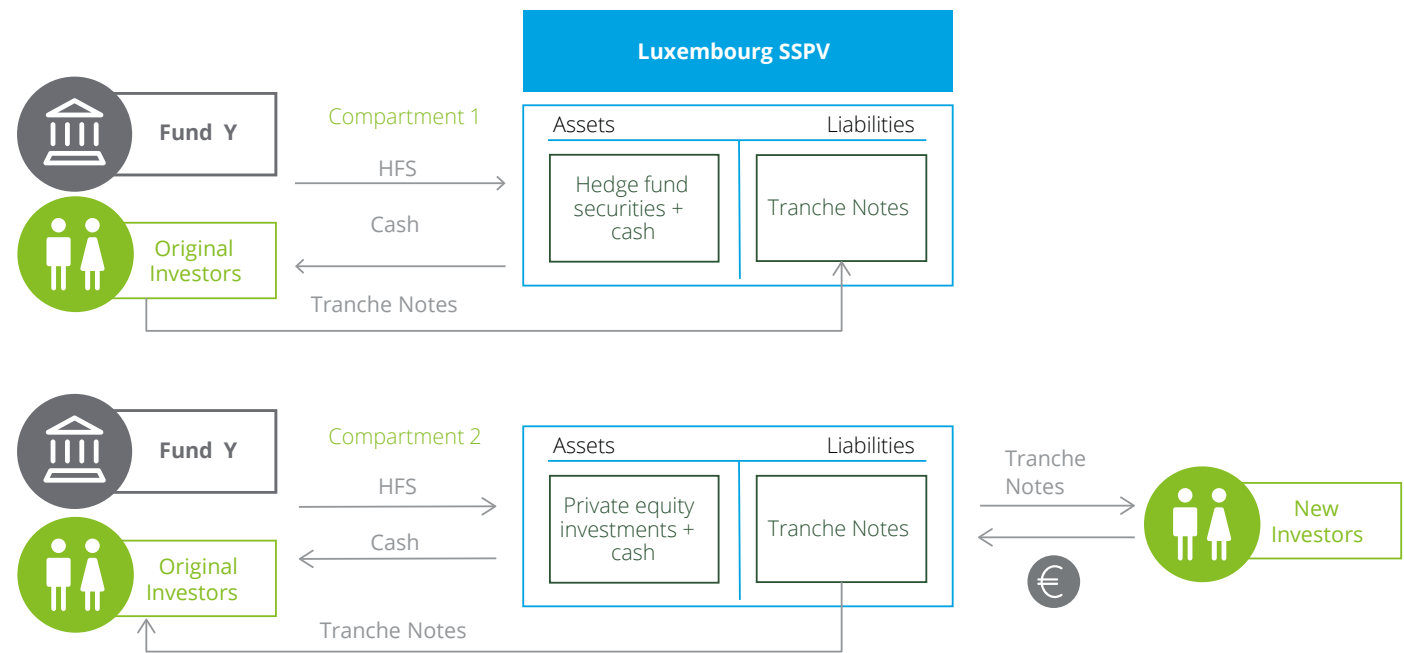
- Illiquid assets are held in a dedicated run-off structure that is scalable
- The compartments of Luxembourg securitization vehicles allow different banks, asset managers, and run-off/liquidating funds to pool illiquid assets in a single legal structure, while remaining segregated from each other
- General operating costs of the securitization vehicle (e.g., accounting, audit, tax services, etc.) can be shared out among several banks, asset managers, and run-off/liquidating funds
- Illiquid assets can be transformed into transferable and tradeable securities that can be distributed in kind to original investors or sold to new investors
- The run-off and/or liquidation of the original investment holding structure can be closed in a timely manner
- A Luxembourg securitization company can be set up as an orphan structure, e.g., the shareholders of the company are Dutch private foundations (Stichtings). The securitization company may therefore not be regarded as a subsidiary of the originator and consolidation may be avoided (depending on the local GAAP)

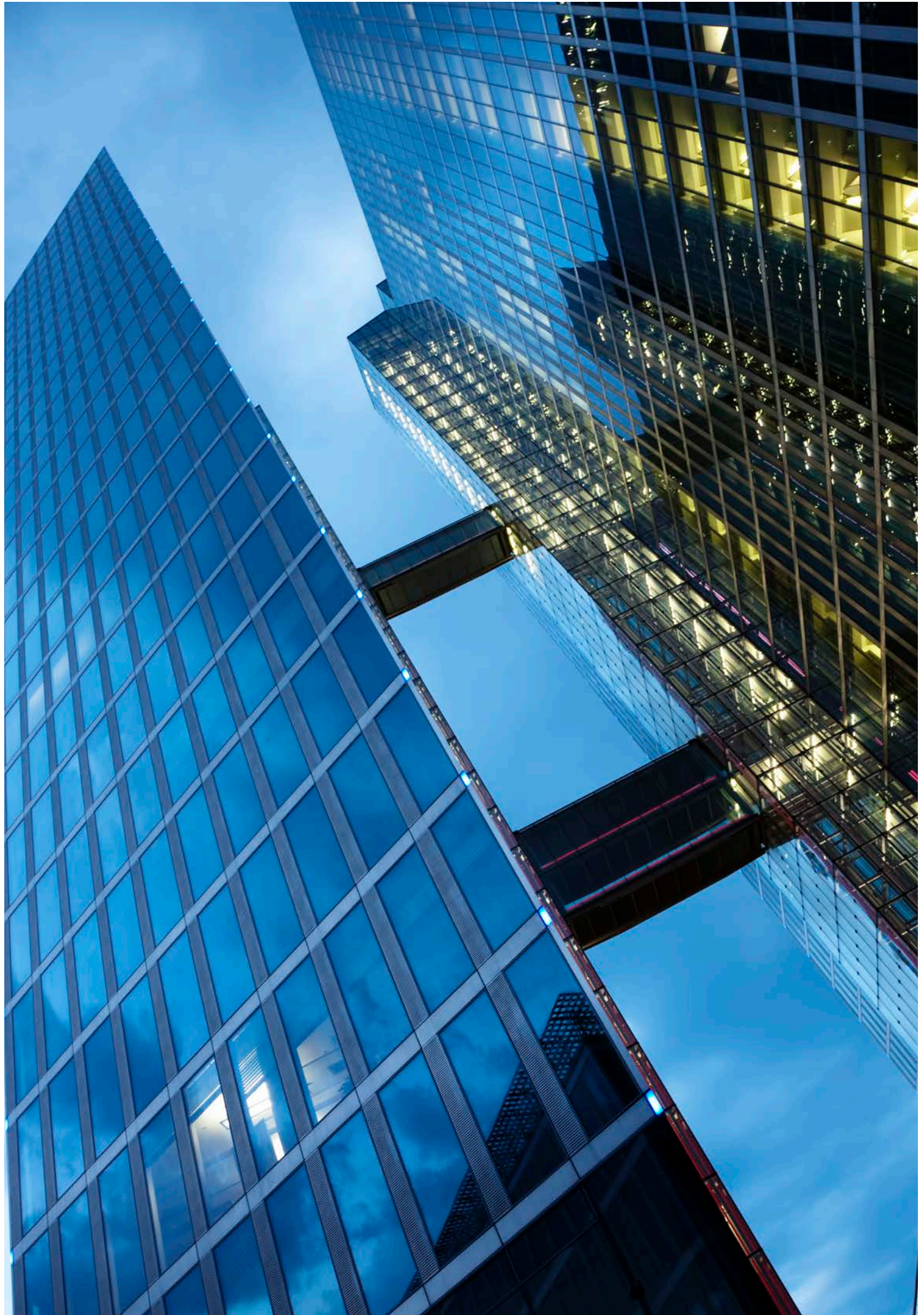


Step 5: Investor reporting and run-off

In terms of investor reporting, the creation of a multi-compartment run-off securitization structure is also appealing. If a Luxembourg securitization vehicle is set up with multiple compartments, a breakdown of assets and liabilities as well as profit and loss statements per compartment must be prepared in addition to consolidated financial statements. These ensure that investors in such securitization vehicles have a clear overview of the performance of each compartment and the auditor can certify compliance with the true and fair principle for both the securitization structure as a whole and the individual compartments.

Figure 32: Run-off structure for illiquid assets





5. Our services and technology

Deloitte Luxembourg—Integrated solutions for securitization services

Securitization has proved to be the refinancing and restructuring vehicle of choice in recent years. Deloitte can guide you on the journey ahead.

5.1. Our services

Deloitte is proud to offer a centralized securitization team and state-of-the-art technology to assist with the initial structuring and regulatory, tax, and accounting set-up, as well as the daily administration of securitization structures, their investment portfolios, and issued financial instruments. Our services encompass:



1

Pre-securitization assistance

Deloitte's pre-securitization advisory services help to prepare portfolios for the securitization process by:

- Focusing on the objectives, needs, and requirements of originators, sponsors, and investors
- Providing modeling and scenario analysis and coordination with rating agencies
- Ensuring completeness of the loan files and documents
- Pre-listing services

2

Securitization implementation assistance

During the second stage, Deloitte can assist with:

Deal structuring

- Formulating a consensual and comprehensive asset (e.g. loan) restructuring plan
- Assisting and coordinating legal advisors in drafting legal documentation
- Preparing financial forecasts

Set up of the securitization vehicle

- Confirmation of the tax treatment applicable to the Luxembourg vehicle (e.g. access to double tax treaties)
- Coordination with external service providers

Asset and collateral valuation Listing and implementation assistance

- Review of commenting on the prospectus and resubmission to the Luxembourg Stock Exchange
- Submission to clearing house of the prospectus approved by the Luxembourg Stock Exchange
- Submission of listing application packages to the Luxembourg Stock Exchange



3

Post securitization services

Following the securitization process, Deloitte can assist you with the daily operations of the securitization vehicle:

Loan servicing and monitoring

- Assisting with evaluation and monitoring of collateral maintenance covenants in loan agreements
- Solvas|Portfolio™ and customized risk management tools (including meeting the requirements of IFRS 9)
- Enforcement option analysis and step-by-step plans for share/asset pledges
- Assisting in the monitoring of investment criteria and restrictions (e.g., for CLOs)
- Modeling and assisting in the monitoring of interest cash flows as well as scheduled and unscheduled distributions/redemptions related to the issued financial instruments

- Modeling and assisting with the monitoring of currency and interest hedging

Accounting, financial, and tax reporting

- Accounting services for entities in multiple locations
- Multi-GAAP (Lux GAAP, IFRS, US GAAP etc.) accounting, financial statement compilation, and consolidation
- Support in the external financial reporting process
- Identification and analysis of proposed and or newly implemented accounting principles
- Continuous tax-efficient planning and structuring; identification and selection of appropriate Luxembourg and foreign investment structures
- Cross-border tax compilation and reporting

- VAT analysis and reporting
- Statutory annual audit

Risk management and modeling

- Basel III, CRR/CRD IV, Solvency II
- IFRS 9
- Measurement and management of financial risk (market, operational, credit, liquidity, etc.)
- Quantitative evaluation and management of portfolio risk
- ICAAP and Economic Capital Calculation
- Capital adequacy, regulatory reporting and compliance for financial institutions
- Development of Value-at-Risk models and back testing. Assistance in the validation of risk models and their technical capabilities and functionalities

5.2. Our technology

Deloitte Advisory offers a range of financial technology software solutions and services to meet the administration, accounting, compliance, and surveillance demands of today's market—and your firm's unique needs. Whether your company is a start-up fund or a large global financial institution, and in more than a dozen countries across five continents, we keep pace with innovations in technology and changes on the global financial markets to help you improve efficiency, increase transparency, and build value.



ABS Suite™

The solution of choice for asset-backed issuers, servicers, and trustees around the world, ABS Suite™ is a powerful structured finance and covered bond program administration system. This solution is backed by the global Deloitte Touche Tohmatsu Limited network of member firms and Deloitte, both recognized as experienced leading service providers to the structured finance industry for more than three decades.

ABS Suite is asset-class independent and has been implemented in the Americas, Europe, Africa, and Asia Pacific for various asset classes, including credit cards, mortgages, vehicle loans and leases, and equipment finance. The system's unique flexibility supports an array of structures, including:

- Discrete trusts
- Master trusts
- Delinked platforms
- Covered bond programs

In today's challenging times, it is more important than ever to have a flexible, scalable, and efficient solution that mitigates risk and provides rich data analytics.

Maximum flexibility

ABS Suite provides a customizable data architecture that is easily adjusted to accommodate an unlimited number of asset classes, interfaces, and transactions. Our unique Allocation Rules Technology (ART™) is a visual tool that is used to define the waterfall and related calculations for even the most complex structures, such as delinked master trusts, with no programming changes. In addition, custom calculations can be defined via a powerful business rules engine.

Increase scalability and operational efficiency

The ABS Suite architecture provides scalability, allowing your program to grow without an incremental increase in resource requirements.

- With ABS Suite's copy functionality, issuing a new transaction can be as easy as copying an existing deal structure
- Our workflow automation allows processing to run unattended and minimizes precious work hours required to perform multiple tasks
- ABS Suite's relational database provides a centralized data repository that can hold data across multiple issuance programs and asset classes

The automated processing allows your team to focus on analyzing results instead of compiling and reconciling information.

Mitigate risk

ABS Suite automates the data exchange between upstream systems, such as loan servicing, origination, and loss management systems and downstream systems such as the general ledger. Standard and customized data validations are performed on both inbound and outbound interfaces.

A "four-eyes" approval process is designed such that changes to any business rule, deal structure, or report are reviewed and approved. Robust audit controls permanently log the results of all calculations, configuration changes,

and user access updates with both user and timestamp information. Role-based security allows customized application access rights for users across the organization.

Enhance business intelligence

Through a combination of a single data repository and robust reporting tools, ABS Suite provides advanced investor and management reporting. The user is able to easily view the performance of a single transaction or the entire platform in standardized or ad hoc reports. User-friendly report writing tools put your organization in control of producing the reporting needed to analyze, monitor, and administer your programs.



ABS Suite's modular architecture includes the following capabilities:

- Collateral management—custom definition of inbound servicing system interfaces, user defined calculations, data transformations, data verifications, and edit checks
- Collateral servicing—an account-level calculation engine to supplement the information that your servicing systems may not be able to provide
- Pool selection—a robust engine to define criteria and concentration limits for asset pooling and analytics
- Transaction structuring deal component pricing and issuance definition along with visual waterfall and calculation definition (using ART™)
- Accounting—defines journal entries and facilitates interfacing with the general ledger
- Collateral forecasting—projects future collateral performance based on the characteristics of your underlying collateral or hypothetical collateral and user-defined performance assumptions
- Transaction forecasting—forecasts the future performance of your transaction using collateral forecasting results paired with your existing or proposed deal structures
- Reporting—an easy-to-use interface to generate a full-range of reports, ad hoc queries, and data extracts required to administer your program

ABS Suite utilizes state of the art technology, including:

- A Service Oriented Architecture (SOA) based on .NET platform
- An advanced user interface based on user-defined metadata, utilizing our proprietary application framework
- A single relational database, using either SQL Server or DBMS
- Robust security features, including native support for various user authentication schemes like Active Directory, Windows Integrated and Basic/Digest
- Support for load-balanced and failover-standby server configurations for quick disaster recovery
- Configurable archiving to support large data volumes





Solvas | Agent™ generates agent reports and notices, individually or in batch, for both borrowers and lenders from asset administration activity tracked in Solvas | Portfolio™.

Solvas supports the full range of administrative tasks, analytical needs, and reporting requirements of the debt market.



Solvas | Portfolio™ is a robust portfolio and asset administration, cash activity tracking, and reporting system designed to support the administrative processes of the middle and back-office.



Solvas | Accounting™ is a dynamic and flexible financial accounting and reporting software package that supports unlimited reporting entity configurations, provides multi-currency support, and allows for various accounting methodologies.



Solvas | Compliance™ allows users to model and calculate credit agreement covenants, portfolio-level eligibility criteria, and concentration limitations without programming. The system also supports hypothetical scenario analysis.



Solvas | Performance™ provides interactive asset, portfolio, and cross-portfolio performance reporting capabilities to complement Solvas | Portfolio.



Solvas | PoP™ provides the capability to design priority of payment calculations as a complement to Solvas | Portfolio and Solvas | Compliance.



Solvas | Credit™ seamlessly integrates multiple data sources to allow for a comprehensive view of current investments and provides the flexibility to aid in credit and trading analysis.



Solv™

In a market where flexibility is key, spreadsheet-based operations produce unwanted risk, and expensive legacy or generalist systems fall short, a complete, flexible, and reasonably priced software package is essential. Deloitte Advisory's Financial Technology™ team offers a leading suite of software solutions for the debt market. The Solvas software solutions encompass credit analysis, portfolio administration, compliance and covenant monitoring, performance reporting, and accounting.

Our comprehensive set of solutions are:

- Built on state-of-the-art, standardized technology platforms
- Ready-to-use without unknown implementation costs
- Business user-friendly
- Modular and flexible to allow you to choose only the functionality you need
- Capable of stand-alone implementation or integration with existing infrastructure
- Available for on-premises or hosted installation
- Competitively priced



Solv | Portfolio™

Solv|Portfolio™ is a multi-asset class portfolio administration and reporting solution for asset managers, alternative investment funds, trustees, fund administrators, and agent banks. Having already been a leading collateralized loan/debt obligation (CLO/CDO) administration solution for the asset management and trustee market for over a decade, Solv|Portfolio™ (together, with Solv|Compliance™, formerly known as CDO Suite™) has evolved into a comprehensive software package for the asset management and financial institution community.

Designed as a diverse portfolio administration, collateral tracking, and reporting tool, Solv|Portfolio™ is used by a wide array of leading financial institutions including hedge fund and asset managers, hedge fund administrators, syndicated, corporate, or real estate loan administrative agents, and agent or trustee banks. Features include:

- Global asset master with portfolio-level overrides
- Detailed support for a broad array of collateral, including bonds, factor-based securities, asset-backed securities, syndicated, corporate, or real estate loans, credit default swaps, and equities
- Multiple payment-in-kind (PIK) calculation methodologies
- Pro rata and non-pro rata trading with purchase lot tracking and global or portfolio trading wizards
- Loan Syndications and Trading Association (LSTA) and Loan Market Association (LMA) trading conventions for par/near-par and distressed trades, including detailed delayed compensation calculations

- Global, cross-portfolio processing of principal and interest transactions, and cash receipts
- Contract-level interest calculations and accruals
- Multi-currency support
- Support for portfolio and asset level swaps
- Expected vs. actual transaction reporting
- Unlimited user-defined fields
- Robust library of standard reports
- Full historical reporting, as of any date
- Data import/export and comparison tools
- User activity logging
- User access control available at multiple levels
- A Web-native user interface
- Centralized, relational database design
- Support for industry-standard reconciliation files and interfaces

Whether the client is a start-up fund manager or one of the world's largest trustees, Solv|Portfolio™ was designed to meet the asset management industry's needs. The result: an easy-to-use, transparent, and comprehensive portfolio administration system.



Solas | Accounting™

Solas|Accounting™ is a dynamic and flexible financial accounting and reporting software package designed for investment managers and fund administrators. Solas|Accounting™ can generate financial reports for portfolios of financial instruments. The system supports unlimited reporting entity configurations, provides multicurrency support, and allows for various accounting methodologies.

Accounting functionality

- Solas|Accounting™ allows various accounting methodologies, including fair value and amortized cost
- Multiple accounting methodologies may be applied to the same portfolio to support reporting on different accounting bases, such as International Financial Reporting Standards and US Generally Accepted Accounting Principles
- The system provides robust handling of back-dated activity related to closed periods
- Solas|Accounting™ has the flexibility to accommodate different accounting period durations, including support for quarterly, monthly, weekly, and daily closing
- Level yield, straight-line, and other custom amortization methods are supported

Presentation capabilities

- The reporting entities in the system have their own customizable chart of accounts and can include one or more portfolios
- Each reporting entity provides independent sequential processing based on its own reporting calendar
- Solas|Accounting™ offers a configurable dashboard

- The system generates various financial reports including:
 - Statement of Assets and Liabilities/ Balance Sheet
 - Statement of Operations/Income Statement
 - Statement of Changes in Net Assets
- Solas|Accounting™ is designed to accommodate complex financial instruments, such as syndicated bank debt or mezzanine loans
- The system allows the presentation of financial reports in different currencies with an automatic, separate calculation of the foreign currency translation gain/loss
- The information in the system is preserved at the most granular level, allowing drill down from aggregate account balances to the underlying individual journal entries

Built-in workflow manager

- The workflow manager includes predefined workflows for setup, on-demand processes, and recurring activities
- Business users can modify predefined workflows or create new workflows to support various procedural or approval needs
- The system supports task assignment to individual users

Implementation

- Solas|Accounting™ can be implemented as a stand-alone accounting system, hosted, or integrated with an existing general ledger
- While Solas|Accounting™ can import transactional data from any portfolio system, Solas|Accounting™ is designed to be integrated with Deloitte's Solas|Portfolio™



Solvas | Agent™

Solvas|Agent™ is an administration and reporting system designed to support the activities of loan administrative agents. Solvas|Agent™ provides the ability to create agent reports and notices from loan administrative activity tracked in Solvas|Portfolio™. The extensive loan administration support of Solvas|Portfolio™ coupled with Solvas|Agent™ brings modern technology to the operations of loan administrative agents.

Efficient, modern distribution

The platform supports individual or batch notice generation in various file formats. The automatically customized notices can be sent directly by the system's email distribution capabilities from your corporate email server or from your team's

desktop email application. All notices distributed are logged in the system for a full record of past correspondence on loan transactions.

Centralized information

Advanced information management for contacts and wiring/payment instructions supports the complex network of parties and details necessary for accurate portfolio servicing.

Agent-specific reporting

In addition to facilitating the agent's administration needs, the system has a library of agent-specific reports, including reports addressing:

- Outgoing wires
- Lender allocations

- Transactions
- Accrual history
- Cash activity

Solvas|Agent™ brings the latest and most accurate administration technology in the loan industry to loan administrative agents.



Solvas | Compliance™

Solvas|Compliance™ is a rules-based compliance engine that provides flexible, user-configurable calculations for CLOs, collateral managers/trustees, alternative investment managers, and fund administrators. The system provides collateral managers and trustees with the ability to model deals without programming and robust compliance test and hypothetical trade scenario analysis capabilities. Alternative investment managers and fund administrators can also use this compliance engine for calculating credit agreement covenants. Combined with the multicurrency and

complex collateral tracking capabilities of Solvas|Portfolio™ and Solvas|PoP™, Solvas|Compliance™ allows advanced monitoring of CLOs and covenants.

Designed for the CLO and loan market, Solvas|Compliance™ offers industry-leading flexibility and control. Features include:

- The ability for business users to model and maintain deals without programming knowledge
- Comprehensive library of CLO compliance test templates

- Ability to create custom variables
- User-controlled calculation sequences allowing for iterative calculation testing
- Dynamic, user-defined rules to determine:
 - Notched ratings
 - Recovery rates
 - Principal balances
 - Calculations
- Multiscenario hypothetical trade analysis
- Data comparison tools



Solas | Performance™

Solas|Performance™ provides performance reporting capabilities as a complement to the Solas|Portfolio™ collateral administration system. Constructed to seamlessly integrate with Solas|Portfolio™, Solas|Performance™ offers interactive, cross-portfolio, and multicurrency performance reporting for collateral managers, trustees, and alternative investment managers. Solas|Performance™:

- Provides asset returns across multiple asset classes directly from activity in Solas|Portfolio™
- Supports multicurrency portfolios as well as various PIK methodologies
- Generates results for a single user-selected portfolio or multiple user-selected portfolios over a specified period of time
- Uses the Modified Dietz investment method and composite return calculations based on Global Investment Performance Standards (GIPS) guidelines
- Produces a unified, dynamic performance report that summarizes performance of portfolio(s)
- Includes interactive drill-down functionality for calculated and dependent values to enhance transparency, usability, and auditability
- Is complemented by a series of portfolio reports for incremental information related to performance calculations including:
 - Earned income
 - Realized gain/loss
 - Interest activity
 - Principal activity
 - Market value



Solas | PoP™

Solas|PoP™ is a rules-based priority of payments module that provides flexible, user-configurable priority of payments calculations for collateralized loan obligation (CLO) collateral managers/trustees, alternative asset managers, and fund administrators. Solas|PoP™ provides the capability to design priority of payments as a complement to the Solas|Portfolio™ and Solas|Compliance™ collateral administration and compliance functionality. Constructed to seamlessly integrate with these systems, Solas|PoP™:

- Allows the typical business user to model all priority of payment calculations (including interest, principal, liquidation, and acceleration) using a set of specialized calculation templates
- Uses calculation capabilities and other features of the Solas|Compliance™ calculation engine, including variables, calculation blocks, and entity level user-defined fields
- Provides the ability to apply separate logical and timing conditions to any payment to customize the payment sequence as required by the indenture, loan agreement, or portfolio documentation (including date applicability and criteria applicability)
- Has the ability to define and reuse payment groups to model complex payment sequences and distribution scenarios easily
- Includes specialized overcollateralization and interest coverage test calculators that have the ability to calculate and apply cures for failed tests
- Allows accrual and tracking of various fees and expenses necessary to model payments and payment caps
- Executes applicable priorities of payments as part of the calculation sequence, either on demand or automatically
- Provides summary and detailed waterfall results with the ability to drill into the calculation details of any payment
- Facilitates the comparison of waterfall results to any current, historical, or hypothetical portfolio created with a trading scenario in Solas|Compliance™

Solas|PoP™ offers a flexible and user-friendly priority of payments and waterfall calculation solution to CLO managers/trustees, alternative asset managers, and fund administrators.

Contacts



Ekaterina Volotovskaya

Partner - Audit
Securitization leader
+352 451 452 387
evolotovskaya@deloitte.lu



Eric Collard

Partner - Restructuring
+352 451 454 985
ecollard@deloitte.lu



Michael JJ Martin

Partner - Restructuring
+352 451 452 449
michamartin@deloitte.lu

Deloitte.

Deloitte is a multidisciplinary service organization that is subject to certain regulatory and professional restrictions on the types of services we can provide to our clients, particularly where an audit relationship exists, as independence issues and other conflicts of interest may arise. Any services we commit to deliver to you will comply fully with applicable restrictions.

Deloitte refers to one or more of Deloitte Touche Tohmatsu Limited ("DTTL"), its global network of member firms and their related entities. DTTL (also referred to as "Deloitte Global") and each of its member firms are legally separate and independent entities. DTTL does not provide services to clients. Please see www.deloitte.com/about to learn more.

Deloitte is a leading global provider of audit and assurance, consulting, financial advisory, risk advisory, tax and related services. Our network of member firms in more than 150 countries and territories serves four out of five Fortune Global 500® companies. Learn how Deloitte's approximately 264,000 people make an impact that matters at www.deloitte.com.

This communication contains general information only, and none of Deloitte Touche Tohmatsu Limited, its member firms, or their related entities (collectively, the "Deloitte Network") is, by means of this communication, rendering professional advice or services. Before making any decision or taking any action that may affect your finances or your business, you should consult a qualified professional adviser. No entity in the Deloitte Network shall be responsible for any loss whatsoever sustained by any person who relies on this communication.