

SPRING WORKSHOP SERIES

SPAIN - 30 MARCH 2022



ON TODAY'S CALL

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AGENDA

WELCOME AND INTRODUCTION

Marco Angheben, European DataWarehouse

LATEST SOLUTIONS

Marco Angheben , European Datawarehouse

NEW EDITOR FEATURES

Rodrigo Di Giannantonio, European DataWarehouse

ESMA DATA QUALITY RULES

Adelina Asani, European DataWarehouse

THE IMPORTANCE OF DATA

Anne-Sophie Spirito, Moody's Investors Service

LATEST DEVELOPMENTS ON STS VERIFICATION

Rob Koning, PCS

ENERGY PERFORMANCE DATA FOR AUTO LOANS

Adelina Asani, European DataWarehouse



WELCOME AND INTRODUCTION MARCO ANGHEBEN, EUROPEAN DATAWAREHOUSE

MARCH 2022



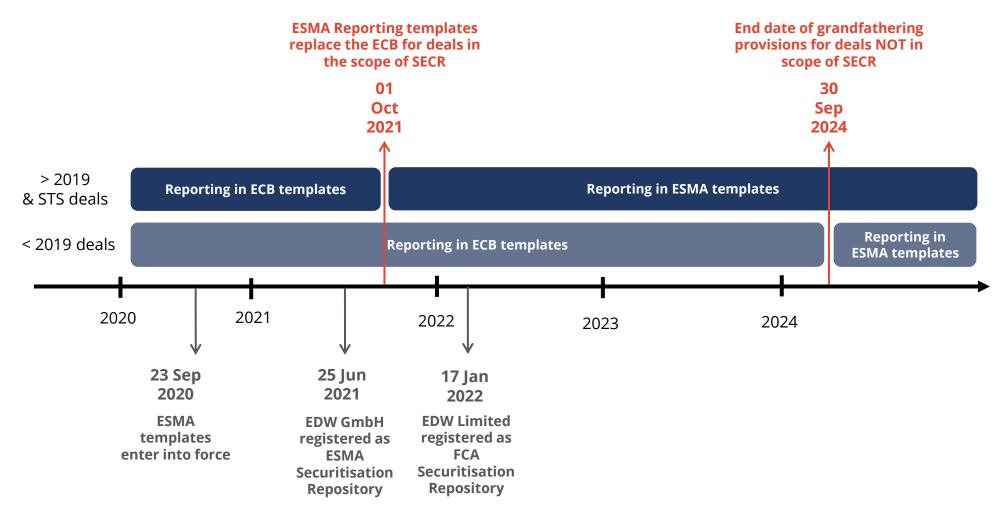
LATEST SOLUTIONS

MARCO ANGHEBEN, EUROPEAN DATAWAREHOUSE

MARCH 2022



CHANGES TO THE EUROSYSTEM'S LOAN-LEVEL DATA REQUIREMENTS



Source: Timeline is based on the information provided in the ECB <u>press release</u> as of 28 June 2021



CURRENT DISCLOSURE REQUIREMENTS

Differences between public and private securitisations in EDITOR – Securitisation Repository solutions

ESMA/FCA Reporting Templates	Public	Private
Underlying Exposures	⊘	⊘
Investor Report	⊘	
Inside Information/ Significant Event	⊘	•

Disclosure requirements based on the RTS/ITS on operational standards for SR	Public Securitisation Repositories (SR)	Private (exempted from reporting to SR)
XML format	⊘	⊘
XML Schema checks	⊘	
ESMA/FCA Scoring	⊘	
Content checks (validation rules)	•	
ND Thresholds	⊘	•

NEW SECURITISATION NOTIFICATION TEMPLATE FROM 1 APRIL 2022

Reporting frequency: Please provide the information as per the date of **origination***. No regular reporting or updates on changes are requested, except for any significant event following Article 7 (1) g) of SECR, affecting or likely to affect the features of transactions, particularly in relation to compliance with Articles 6 to 8 SECR. If so, please notify the ECB via CASPER, submitting also the updated template reflecting the significant events.

Required data points: Depending on the type and specificities of the transaction, not all data fields are required to be reported. For example, in case of a self-retained securitisation, there is no need to report further data points in the risk retention section. Upon selecting "Yes" for *Fully self-retained transaction*, the remainder of the Risk Retention section will be formatted in grey to indicate that the other cells do not need to be filled.

<u>Multi-seller pools</u>: In relation to shared pools/multi-seller pools, each originator should notify the pro-rata participation in the pool and all the required data fields. In case of transactions with original lender and potentially several interim originators and one final originator (i.e. exposures sold subsequently from one originator to the other), notification is expected from the final originator who securitises the exposures.

<u>Upload of attachments</u>: Please note that one file can be uploaded as an attachment in CASPER up to the maximum size permitted (currently 10MB). Thus, please either provide the written confirmation that the securitisation complies with Art. 6-8 and the assessment of its internal policies, processes and procedures in one document or include all documents in one zip file.

<u>Update of the template</u>: The notification template and these instructions may be subject to change from time to time as required. Please make sure to use the latest version of the template as available in CASPER when submitting a notification in CASPER.

* The date on which the exposures were first securitized, which may be one of the following: the date of the first issuance of securities (traditional securitizations), the date of the credit protection agreement (synthetic securitizations), or the date on which the initial securitization positions were created (ABCP transactions) or on which the asset-backed commercial paper was first issued (ABCP programmes). This is in line with Article 43(9) SECR.

Source: ECB website

Reporting entity
Banking group of reporting entity

Identifier of the securitisation
Unique identifier

Identifier assigned by Securitisation Repository

Type of transaction

Resecuritisation

Legitimate purpose for resecuritisations

Date of origination

Reference date of information

Status of STS

Status of SRT

Revolving exposures

Revolving securitisation

Unique identifier of corresponding ABCP Programme

Information on the credit enhancement (ABCP)

Liquidity line provided by the sponsor (Total in EUR)

Credit facility provided by the sponsor (Total in EUR)
Other support provided by the sponsor (Total in EUR)

Type of other support provided by the sponsor

Classification of the underlying exposures (ABCP)

Classification of the underlying exposures (ABC

Total number of transactions

NPE securitisation

Portfolio in the ramp-up phase

Final legal maturity

Nominal amount of the underlying securitised exposures

Total in EUR

Breakdown by currency:

Most relevant currency

2nd most relevant currency

3rd most relevant currency

GUIDE ON THE NOTIFICATION OF SECURITISATION TRANSACTIONS

Timeliness of the notification

It is recommended that new transactions be notified to the ECB no later than one month from the date of origination.¹⁰

The ECB foresees a phase-in implementation until [1 October 2022] for those SIs unable to properly notify the ECB from [1 April 2022]. During the phase-in period, SIs are expected to finalise set-ups and systems to be able to submit notifications in line with the expectations of the Guide.



Information to be provided at origination

Originators or sponsors are expected to provide the ECB with the information relating to each new transaction at origination as listed in the Annex, which is divided into the following four sections:

- Section A (key transaction information);
- Section B (information on securitised exposures);
- Section C (information on securitisation positions);
- Section D (compliance with Articles 6 to 8 SECR).

Information to be provided during the life of the transaction

The requirements of Articles 6 to 8 SECR have to be fulfilled on a continuous basis. Originators or sponsors are recommended to notify the ECB without undue delay of any significant event affecting or likely to affect the features of transactions during the life of the transaction, particularly in relation to compliance with Articles 6 to 8 SECR.

MARCH 2022 Source: ECB website

FCA XML SCHEMA UPDATE

End of the Temporary Transitional Power

On 1st April 2022 the UK TTP comes to an end and the UK transitions from the EU Securitisation Regulation to the UK Securitisation Regulation.

FCA XML Schema Update

Ahead of this transition the FCA have published updated UK schemas to their Securitisations webpage, with the key changes being the removal of EU names and references. The following two updates have now been made on the FCA Securitisation page:

- Update with new schemas/ validation rules and amended worksheets; and
- Update to the validation rules for XML reporting of public securitisations.

EDW CSV2XML Converter Tool

The EDW Converter tool will be updated to support the new schema on the evening of the 31st March 2022. Clients won't need to make any changes and can continue to use the ESMA CSV templates after the change for most relevant asset classes (RMBS / Auto ABS / Consumer ABS / Credit Card ABS).

REPORTING SOLUTIONS UNDER ESMA AND FCA REGIMES

a) Private ABS transaction, as defined in a) Private ABS transaction, as defined in a) Private ABS transaction	saction as defined in
Article 7.2, subparagraph 3 of Regulation (EU) 2017/2402 (securitisations where no prospectus has to be drawn up in compliance with Directive 2003/71/EC, repealed by Regulation (EU) 2017/1129). b) Listing: in the EU c) Reporting obligation/s: ESMA disclosure regime only (Article 7.1 of Regulation (EU) 2017/2402 along with the corresponding developing regulatory and implementing technical standards adopted by the European Commission) d) Dedicated website solution: EDITOR GmbH only. e) Costs: Annual fee of €7k starting from the second year of the deal creation (up to 30 June 2022) Article 7.2, subparagraph 3 of Regulation (EU) 2017/2402 (securitisations where no prospectus has to be drawn up in compliance with Directive 2003/71/EC, repealed by Regulation (EU) 2017/1129). b) Listing: in the EU c) Reporting obligation/s: ESMA disclosure regime only (Article 7.1 of Regulation (EU) 2017/2402 along with corresponding developing regulatory and implementing technical standards adopted by the European Commission), plus the delta with regard to the FCA disclosure regime (Article 7.2, subparagrag of 2017/12402 (securitisation has to be drawn up in compliance with Directive 2003/71/EC, repealed by Regulation (EU) 2017/1129). b) Listing: in the EU c) Reporting obligation/s: ESMA disclosure regime only (Article 7.1 of Regulation (EU) 2017/2402 along with corresponding developing regulatory and implementing technical standards adopted by the European Commission), plus the delta with regard to the FCA disclosure regime (Article 7.1 of the UK Securitisation Regulation along with corresponding developing technical standards adopted by the European Commission), plus the delta with regard to the FCA and the PR request (to enable the due-diligence requirements for institutional investors prescribed in Article 5 of the UK Securitisation Regulation. d) Dedicated website solution: EDITOR	tion/s: ESMA disclosure The tion/s and implementing The tion of t

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NEW EDITOR FEATURES

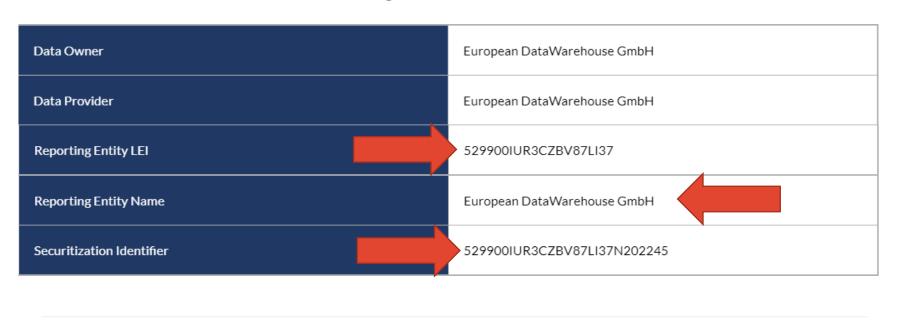
RODRIGO DI GIANNANTONIO, EUROPEAN DATAWAREHOUSE

REPORTING ENTITY

Reporting Entity is derived from Securitisation Identifier

Create Deal

Ensure all details below are correct before confirming new deal.





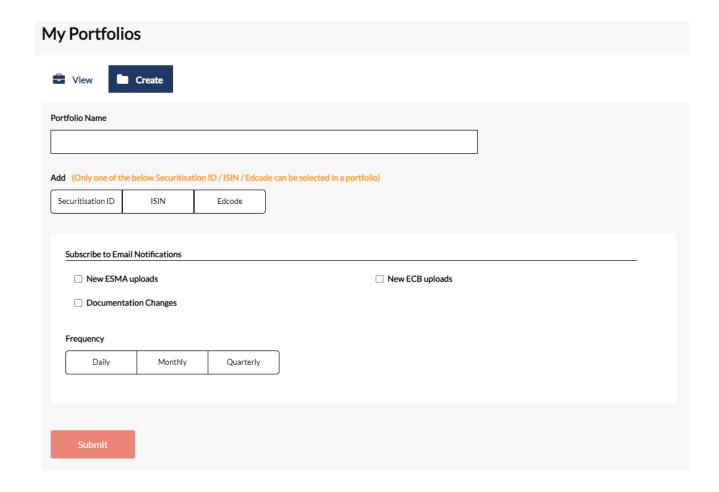




ADD AND VISUALISE PREFERRED DEALS

Stay up to date with recent submissions and new document uploads using the MyPortfolio tool in EDITOR

- Via the EDITOR "Home" tab, create a personal portfolio and add specific deals based on the Securitisation ID, ISIN, or EDCode.
- Select the type of notification you want to receive:
 - ✓ New ESMA uploads
 - ✓ New ECB uploads
 - ✓ Documentation Changes
- Select the frequency of the notifications: Daily, Monthly, or Quarterly.



COMPLIANCE WITH ARTICLE 5 OF THE SECURITISATION REGULATION

Get key transaction information in a standardised format with EDW Monitoring Report Solution

- Supports institutional investors in carrying out their due diligence assessment to comply with ongoing monitoring requirements under Article 5 of the Securitisation Regulation
- Contains a transaction summary with the most important information for a selected deal, such as principal balance, average LTV ratio, risk retention method, and ISIN-level data
- Allows in-depth insights on the pool of underlying assets, retrieved directly from EDW's database
- Currently available for RMBS and Auto asset classes - others soon to come

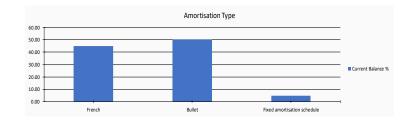
- 3. Prior to holding a securitisation position, an institutional investor, other than the originator, sponsor or original lender, shall carry out a due-diligence assessment which enables it to assess the risks involved. That assessment shall consider at least all of the following:
- (a) the risk characteristics of the individual securitisation position and of the underlying exposures;
- (b) all the structural features of the securitisation that can materially impact the performance of the securitisation position, including the contractual priorities of payment and priority of payment-related triggers, credit enhancements, liquidity enhancements, market value triggers, and transaction-specific definitions of default;

MONITORING REPORT SOLUTION FOR INVESTOR DUE DILIGENCE

Comprehensive overview. Easy to read. Quick to download.

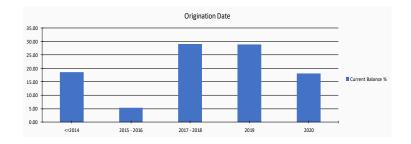
Amortisation Type

	Current Balance	Current	Number of
		Balance %	Loans
French	200,963,505.00	44.87	2,612
Bullet	225,812,671.00	50.42	2,541
Fixed amortisation schedule	21,131,294.00	4.72	240



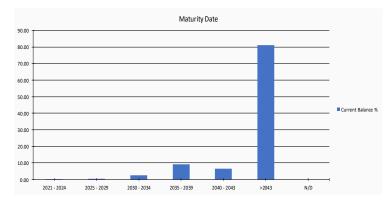
Origination Date

	Current Balance	Current Balance %	Number of Loans
<=2014	96,450,188.11	18.62	1,125
2015 - 2016	27,485,982.82	5.31	328
2017 - 2018	150,714,382.72	29.10	1,348
2019	149,883,468.21	28.94	1,341
2020	93,415,313.96	18.04	832



Maturity Date

	Current Balance	Current	Number of
	Current balance	Balance %	Loans
2021 - 2024	64,727.22	0.01	8
2025 - 2029	2,274,397.25	0.45	59
2030 - 2034	13,146,238.84	2.58	194
2035 - 2039	46,352,073.62	9.11	538
2040 - 2043	33,746,284.18	6.63	366
>2043	413,477,314.83	81.22	3,649
N/D	0	0	223



WRITTEN CONFIRMATION

Reporting Entities (RE) are obliged to provide a written confirmation to the Securitisation Repository (SR) in line with the Regulatory Technical Standards (RTS) on operational standards for SRs.



When should it be submitted?

Within 5 working days of the first issuance of securities for securitisations

Upon any material changes to documents uploaded to the SR

On an annual basis



How should it be submitted?

Via upload to EDW's SR platform through EDITOR (web and SFTP) under item code - 13

As an email attachment to enquiries@eurodw.eu with the subject:

"Written Confirmation -<SecID or DealName>"



What about Due Diligence?

FDW shall review the written confirmation document to ensure it reflects the underlying documentation uploaded

EDW shall verify that the document has been signed by a legal representative or authorized person of the RE

*Applicable to any public deal that has documents uploaded against items 3-9



Which privacy measures are in place?

The written confirmation document will be stored in a secure location accessible only by EDW

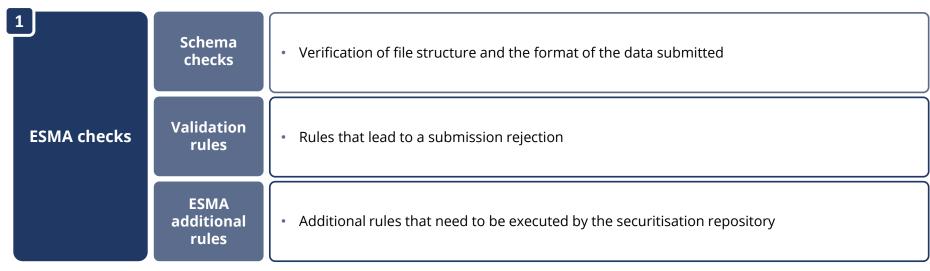
Data users will be made aware that a written confirmation has been received and verified by EDW, but will not gain access to the actual document itself



UPDATE ON DATA QUALITY RULES

ADELINA ASANI, EUROPEAN DATAWAREHOUSE

OVERVIEW OF EDW'S DATA QUALITY IMPROVEMENT PROCESSES







IDENTIFYING THE ADDITIONAL CHECKS DEVELOPED BY EDW

EDITOR's 'Download feedback' function allows issuers to view the failing checkIDs for the submitted ESMA templates

RuleId	RuleDesc	TemplateType	Status	Records
RREL63/UD/A/01	Prepayment Date (RREL63) later than Data Cut-Off Date (RREL6).	RMB	RJCT	5
RREL4/IS/A/01	[WARN] Original Obligor Identifier (RREL4) reports a different value than in the previous submission.	RMB	WARN	6
RREL37/IS/A/01	[WARN] Scheduled Principal Payment Frequency (RREL37) reports a different value than in the previous submission.	RMB	WARN	1
RREL48/CZ/A/01	[DQS] Interest Rate Cap (RREL48) equal to zero; for active loans.	RMB	WARN	5467
RREL49/IIC/A/01	[Data Quality Plus] Interest Rate Floor (RREL49) higher than Current Interest Rate (RREL43).	RMB	WARN	3320
RREL68/UHV/A/01	[Data Quality Plus] Number Of Days In Arrears (RREL68) greater than 180 when Account Status is not 'Defaulted' or 'Other' (RREL69 not in ('DFLT';'NDFT';'DTCR';'DADB';'OTHR')).	RMB	WARN	12
RREL69/OTH/A/01	[Data Quality Plus] Account Status equal to 'Other' (RREL69 = 'OTHR').	RMB	WARN	22
RREL73/ND5/A/01	[DQS] Allocated Losses (RREL73) reports ND5 when Sale Price (RREC21) or Date Of Sale (RREC20) are populated; for active loans.	RMB	WARN	6150
RREL8/IIC/A/01	[Data Quality Plus] Date Of Repurchase (RREL8) is populated when Account Status is not 'Repurchased' or 'OTHR' (RREL69 not in ('REBR'; 'REDF'; 'RERE'; 'RESS'; 'REOT'; 'OTHR')).	RMB	WARN	7421
RREL8/UD/A/02	[DQS] Date Of Repurchase (RREL8) earlier than 1980-01.	RMB	WARN	7443

- **RJCT** → Validation rules
- **[WARN]** → Additional ESMA rules
- **[DATA QUALITY PLUS]** \rightarrow Rules developed by EDW to improve the quality of ESMA submissions
- [DQS] → A subset of Data Quality Plus rules used to calculate the DQS score

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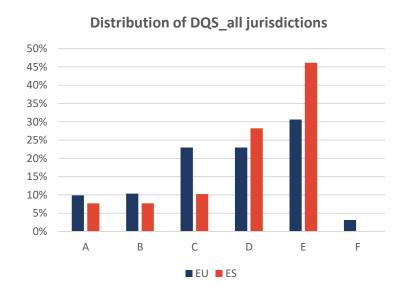
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DQS SCORE DISTRIBUTION FOR ESMA TEMPLATES

Methodology

- Automated score based on DQS failed rules subset of all EDW Data Quality Plus rules
- Objective and common approach for all deals, jurisdictions, and asset classes
- Based on the following formula: $\frac{\sum (F_f)}{n \times MF}$ where:
 - F_f represents a field that failed a rule;
 - *n* is the total number of loans for each mandatory field;
 - *MF* represents the number of unique fields per each asset class with at least one DQS check implemented.

DQS1 Score	Min. Fail Ratio	Max. Fail Ratio	Ratio	
А	0.0000%	0.0001%	Up until 1 in a million	
В	0.0001%	0.005%	Up until 5 in 100k	
С	0.005%	0.1%	Up until 1 in a thousand	
D	0.1%	1%	Up until 1 in a hundred	
E	1%	4%	Up until 4 in a hundred	
F	4%	100%	> 4 in a hundred	



Note: data based on ESMA template submissions as of 10 March 2022 / Source: EDW calculations



MAIN DRIVERS FOR ESMA DQS

	Field
1	Credit Impaired Obligor
2	Purchase Price
3	Current Principal Balance
4	Origination Channel
5	Date Of Restructuring
6	Redemption Date
7	Maturity Date
8	Original Term
9	Number Of Days In Arrears
10	Original Term

SEVERAL KEY BENEFITS USING EDW'S EXTENDED TEMPLATES

Easy-to-use format

The data can be submitted in CSV-format



Time- & resource-saving

No need to prepare a second loan tape for credit rating agencies

Free of charge

The templates are available free of charge to EDITOR users

Restricted access only

Templates provided via SFTP with access for selected parties only

MARCH 2022

A SEAMLESS UPLOAD PROCESS

The XML files can be published in EDITOR for ESMA-regulatory compliance **Upload EDW** The ESMA fields are Extended Templates automatically in CSV-format to the converted into an XML file CSV2XML Converter esma European Securities and Markets Authority The EDW Extended Templates are automatically stored in CSV-format for **SFTP** Restricted access



THE IMPORTANCE OF DATA

ANNE-SOPHIE SPIRITO, MOODY'S INVESTORS SERVICE



The importance of data quality in Moody's credit analysis

Agenda

- 1. Data quality is key for credit analysis
- ESMA templates will raise data quality, but additional information is needed for credit analysis
- 3. Examples of information missing from ESMA's framework

Data quality is key in structured finance transactions credit analysis

The evaluation of the characteristics of the underlying assets is a key element of our rating analysis

Hence our rating analysis relies, in part, on the quality of the data provided



Data should provide an accurate representation of the asset characteristics

We rate transactions only if we have sufficient information from reliable sources

- » Data quality concerns may limit the rating assigned
- Data quality concerns may result in an assessment that, for a given rating level, a higher credit enhancement is needed than would otherwise be the case



Data quality is important through the life of the transactions and essential for our surveillance process

Accurate and complete information is needed at origination and during the life of the transactions

- » Data quality concerns can lead to surveillance rating committees
- » Consequences could be an increase in the credit enhancement needed for a particular rating, a rating downgrade or a rating withdrawal

ESMA templates will raise data quality but additional information is needed for credit analysis

Standardised disclosures ease credit risk analysis and benchmarking

Ongoing access to data beyond the ESMA templates is needed

Securitisation repositories support data consistency and availability

and

ESMA reporting requirements introduce consistent disclosures on collateral, performance, counterparties, triggers and bonds information

- » Increased transparency and comparability of data
 - All fields are mandatory
 - Consistent format
 - But certain aggregated data lack

It is crucial that servicers continue to provide missing information on a voluntary basis, to ease credit analysis

- » Missing loan by loan information:
 - Needed at closing and during the life of the transaction for revolving pools
- » Missing investor report information:
 - Key aggregated and cumulative asset information is needed to access consistent asset level performance indicators

Securitisation repositories gather, maintain and make available transaction reports. This is increasing data quality.

Data repositories have the right to reject a report if too much information is missing

Loan by loan fields missing from ESMA templates

Examples of RMBS loan-by-loan data outside of ESMA's framework

Additional loan-by-loan data	Details
Additional information on property postcode	For non-EU deals that do not use NUTS3 code
Additional information on repayment method	To also identify interest only loans associated with savings deposit, investment portfolio or life insurance policy
Prior repossessions	Indicator of prior repossessions, Yes/No, if available
Additional information if an automated valuation model (AVM) is used as a method for property valuation	Information about the AVM provider and its stated confidence interval
Additional information on borrower's bad credit history	For example, regarding county court judgements or previous mortgage arrears, if applicable

Nomenclature of Territorial Units for Statistics (NUTS) is a hierarchical classification of administrative areas. Source: Moody's Investors Service

Examples of investor reports data missing from ESMA templates

Additional investor report data	Details
Aggregate principal outstanding balance	Current aggregate pool balance at the end of the reporting period; to be stated whether defaulted loans have been included or not
Cumulative additions	Since closing, cumulative amount of receivables added to the portfolio (for nonrevolving transactions, for example in case of tap issuance)
Cumulative and periodic replenishments	Cumulative (since closing) and periodic amount of receivables added to the portfolio during revolving period (for revolving transactions)
Cumulative substitutions	Since closing, cumulative amount of substituted loans
Cumulative and periodic prepayments	Cumulative (since closing) and periodic unscheduled principal payments received
90+ days delinquent loan amount	90+ days delinquent loan balance, excluding defaulted loans as relevant
Cumulative and periodic losses	Cumulative (since closing) and periodic loss amount
Cumulative recoveries	Since closing, cumulative amounts recovered from property sale and other sources
Gross cumulative and periodic defaults	Cumulative (since closing) and periodic defaulted loan amounts
Cumulative and periodic properties sold (loan amount)	Cumulative (since closing) and periodic loan amount relating to properties sold
Receiver of rent outstanding amount	t Mainly for UK buy-to-let RMBS
Cumulative and outstanding amount of repossessions	Mainly for UK and Irish RMBS

Source: Moody's Investors Service

Additional information for NPL transactions

Examples of NPL data outside of ESMA's framework

Additional loan-by-loan data	Details
Secured loan	Flag showing whether the loan is secured or unsecured
Cash in court	Cash amount in court to be received
Property type	Type of property securing the loan
Additional investor report data	Details
Legal cost	Cumulative and periodic legal and procedure costs
Legal fees	Cumulative and periodic legal and procedure fees
Gross collections	Period gross collections before deduction of fees and costs
Net collections after costs	Period net collections after deduction of costs (or recovery expenses)
Net collections after fees and costs	Period net collections after deduction of fees and costs
Profitability	Profitability for fully closed and fully resolved debtors, as applicable (in percent)
Gross book value	Gross book value at the end of period
GACS cost due	Garanzia sulla Cartolarizzazione delle Sofferenze (GACS) costs in the period - accrued amount
GACS costs paid	GACS costs in the period - paid amount
Collection type	Collections by type of proceeds (e.g. discounted payoffs, note sales etc)

Source: Moody's Investors Service



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This publication does not announce a credit rating action. For any credit rating action information and rating history.

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LATEST DEVELOPMENTS ON STS VERIFICATION

ROB KONING, PRIME COLLATERALISED SECURITIES (PCS)

MARCH 2022

Setting the Standard for Securitisation

March 2022



Agenda

- The (STS) Securitisation Regulation:
- History
- Quick fix (CMRP)
- Review
- Sustainable securitisation



History

- EU 2017/2402 General framework for securitisation and creating a specific framework for simple, transparent and standardised securitisation ("STS Regulation")
- Most articles apply irrespective of the STS status (Art 5 Due diligence, Art 6 Risk Retention, Art 7 Disclosure, Chapter 3 Repositories)
- Chapter 4: STS (Art 20 Simplicity; Art 21 Standardisation; Art 22 Transparency; Art 23-26 STS for ABCP)
- Art 28: Third party verification
- Art 45: Review (by 1-1-2022)
- Art 46: Framework for (balance sheet) synthetic STS
- EU 2017/2401 Amending the CRR

Quick Fix (CMRP)

- EU 2021/557 Amending EU 2017/2402 to help the recovery from the Covid-19 crisis
- NPL securitisation (not eligible for STS)
- STS for (on balance) synthetic securitisation
- Art 22.6: Sustainability indicators in relation to adverse impacts
- Art 45: Developing a specific sustainable securitisation framework
- EU 2021/558 Amending the CRR
- Art 248.4: Synthetic Excess Spread

- 17-5-2021: ESAs Report on the implementation and functioning of the Securitisation Regulation
- Private securitisations (definition, repositories)
- Jurisdictional scope
- Better coordination of the supervision
- 23-7-2021: EC Consultation on the functioning of the FU securitisation framework
- 25-10-2021: Call for Advice of the EC to the ESAs for the purpose of the securitisation prudential framework: answer due September 2022

Sustainable Securitisation

- 2-3-2022: EBA Report Developing a Framework for Sustainable Securitisation
- For sustainable securitisation: use the EU Green Bond Standard (EU GBS)
- Asset backed bonds should also be based on Use of Proceeds
- Disclosure on both the collateral and the use of proceeds
- No framework for social or green synthetic
- Sustainable Finance Disclosure Regulation (SFDR)
- Securitisation not defined as financial product
- RTS on adverse impacts still pending



Thank you for your attention

follow us on in





ENERGY PERFORMANCE DATA FOR AUTO LOANS

ADELINA ASANI, EUROPEAN DATAWAREHOUSE

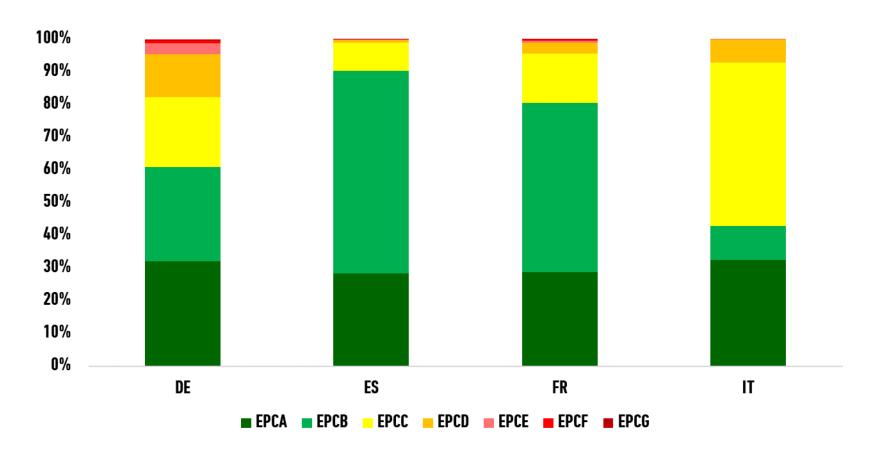
MARCH 2022

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ENERGY PERFORMANCE CERTIFICATES – AUTO LOANS

EPC distribution by Country

- Most cars have a Rating of C or better





CAR ENGINE TYPE ADELINA ASANI, EUROPEAN DATAWAREHOUSE

MARCH 2022 4

MINING CAR MODEL DATA TO IMPLY CAR ENGINE TYPE

Manufacturer and car model is reported to EDW for each car loan/lease

Based on hints in the model provided, cars were grouped into 4 engine types

A Large Text Mining Exercise:

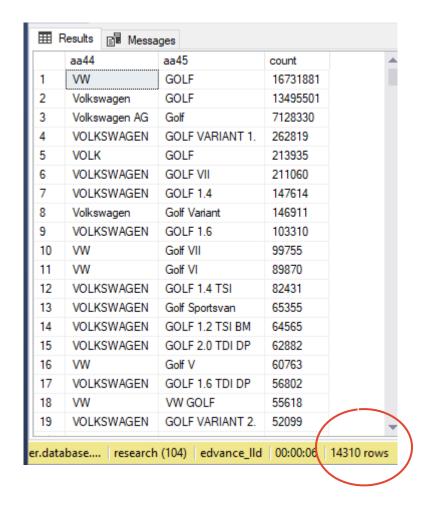
14,310 unique combinations for a VOLKSWAGEN GOLF alone!!

Example:

- ✓ TDI implies Diesel
- ✓ TSI implies Petrol, and so on

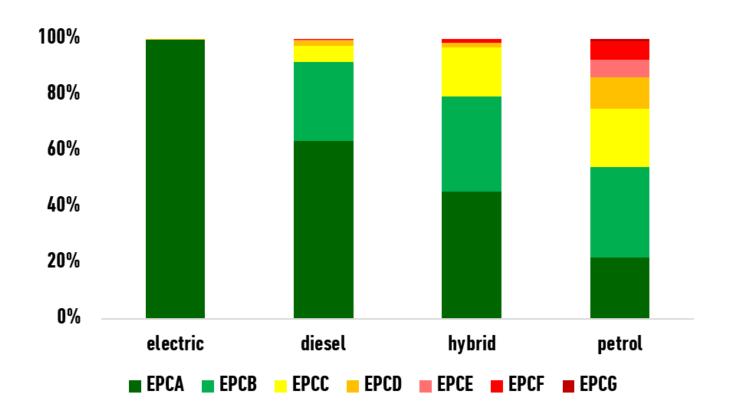
1.94M car loans/leases successfully matched from:

- 9 different countries in Europe
- 81 ABS transactions
- 29 major car manufacturers



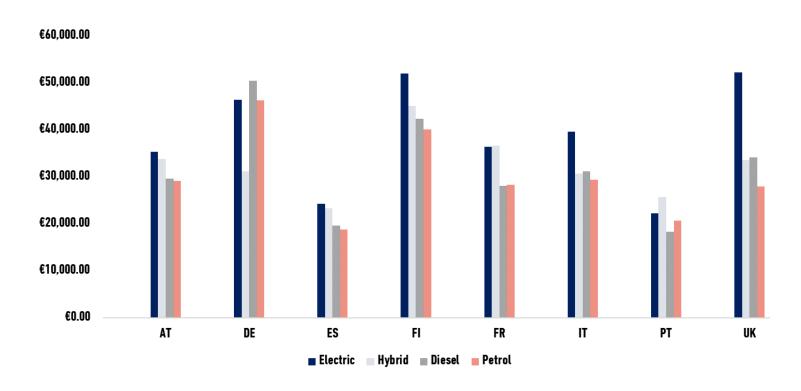
EPCS ASSIGNED TO CARS BY ENGINE TYPE - EUROPE (9 COUNTRIES)

Petrol cars seem to have the least favourable EPC distribution



ANNUAL INCOME OF BORROWERS BY COUNTRY AND ENGINE TYPE

Only borrowers with income between 10k and 120k considered

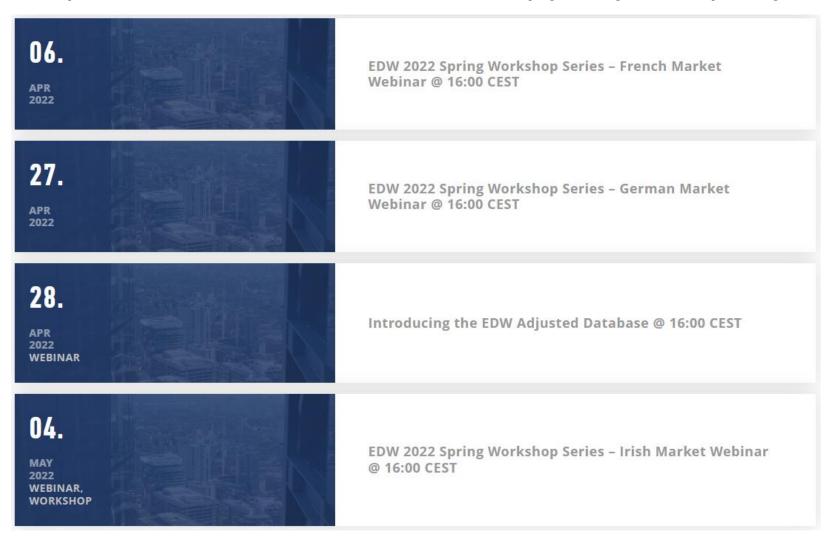


- Huge subsidies/tax advantages for electric and hybrid car purchases in Germany
- Plug-in hybrid cars can be bought and driven on petrol alone



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