

2023 DATA QUALITY INITIATIVES

20 JUNE 2023



ON TODAY'S CALL

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AGENDA

WELCOME & INTRODUCTION

- Dr. Christian Thun, European DataWarehouse

DATA QUALITY – CURRENT STATE OF AFFAIRS

- Adelina Asani, European DataWarehouse

EDW'S ACTIVITIES WITH ABS REPORTING ENTITIES

- Adelina Asani, European DataWarehouse

THE IMPORTANCE OF DATA QUALITY FOR MOODY'S CREDIT ANALYSIS

- Maria Turbica, Moody's Investors Service

CLOSING REMARKS

Q&A

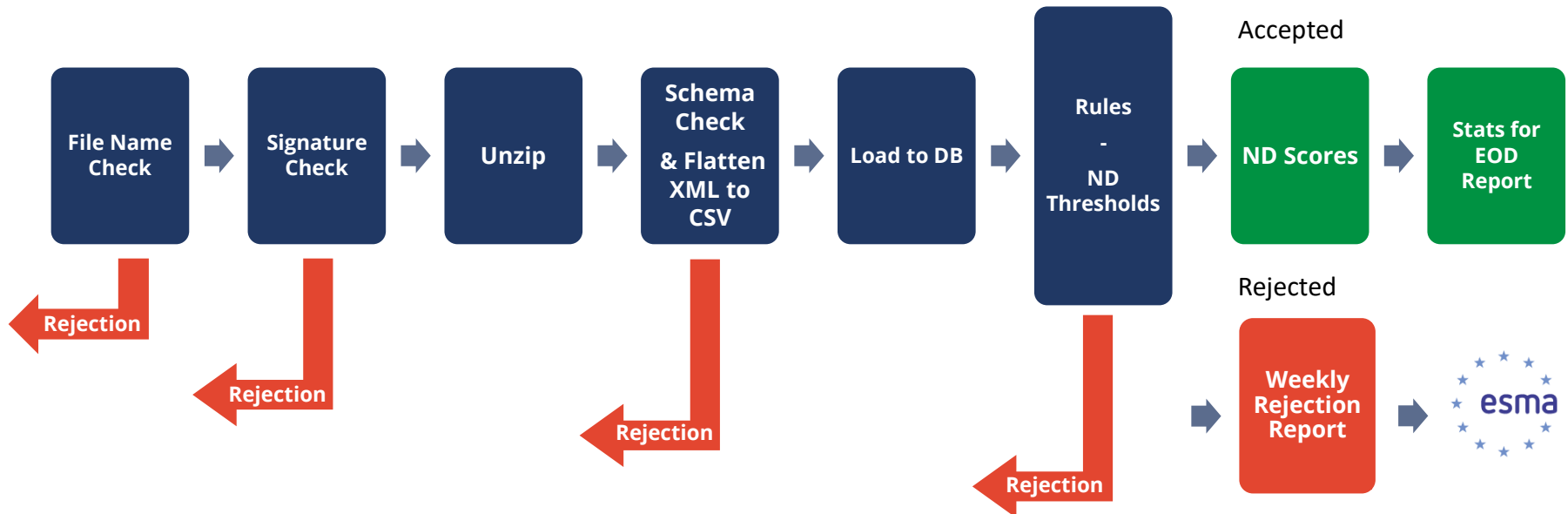
WELCOME & INTRODUCTION

DR. CHRISTIAN THUN, EUROPEAN DATAWAREHOUSE

DATA QUALITY – CURRENT STATE OF AFFAIRS

ADELINA ASANI, EUROPEAN DATAWAREHOUSE

DATA SUBMISSION WORKFLOW

**Please note:**

In case of errors, each step is fully completed before producing an error file.

RULES BASED DATA QUALITY ANALYSIS

EDW implemented >2,700 data quality checks that are executed with every template upload

1

**Mandatory
Checks req. as
per Sec.Reg
(ca. 1,200)**

**Schema
checks**

- Verification of file structure and the format of the data submitted

**Validation
rules**

- Rules defined by ESMA that lead to a submission rejection

**EDW
additional
rules**

- Additional rules that are developed by EDW, as part of regulatory requirements

2

**Additional
EDW checks
(>1,500)**

**Data Quality
Plus**

- Additional voluntary rules developed by EDW

**Data
Quality
Score**

- A subset (ca. 400) of Data Quality Plus rules used to calculate the **Data Quality Score (DQS)**

EUROPEAN DATAWAREHOUSE – PROPRIETARY DATA QUALITY SCORE (DQS)

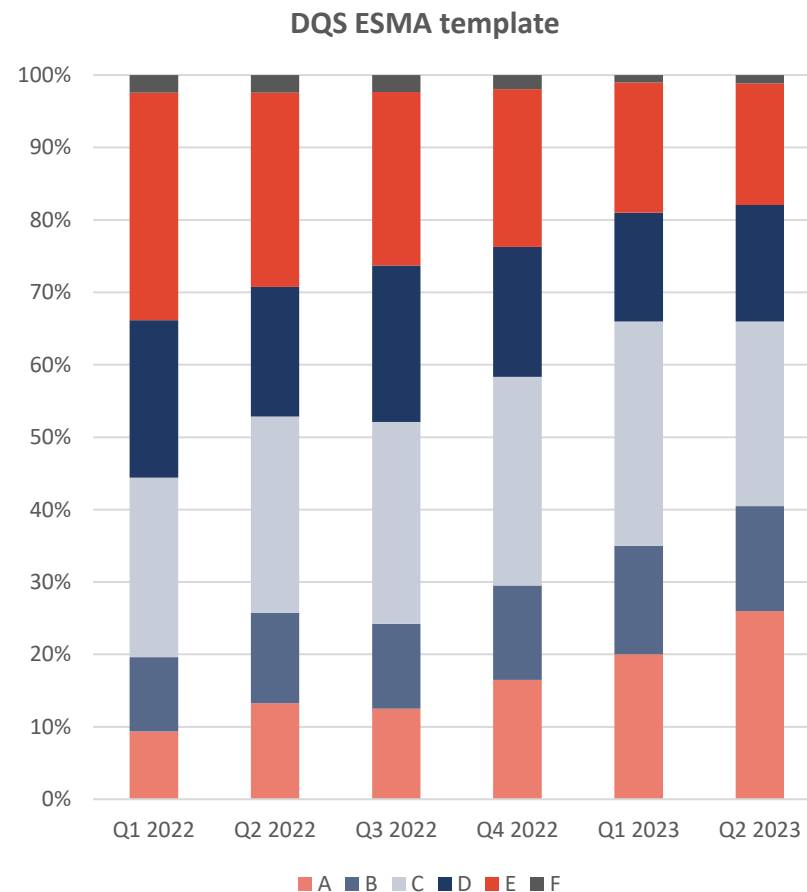
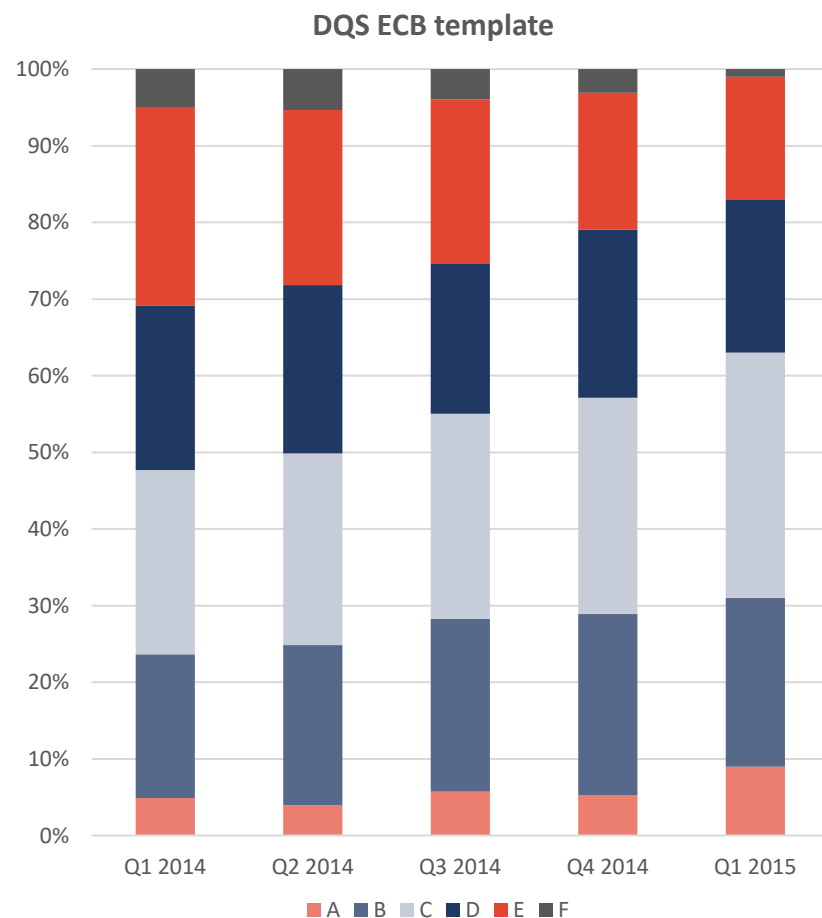
- Automated score based on hard failed rules – subset of EDW Data Quality Plus rules
- Objective and common approach for all deals, jurisdictions and asset classes
- The score is calculated for all deals passing the minimum ESMA validation checks
- Based on the following formula: $\frac{\sum_1^n (F_f)}{n \times MF}$

Where:

- n is the total number of loans for each relevant field
- F_f represents a field that failed a rule
- MF represents the number of the field for which there is at least one DQS rule. This number is specific per each asset class.

DQS Score	Min. Fail Ratio	Max. Fail Ratio	Ratio
A	0.0000%	0.0001%	Up until 1 in a million
B	0.0001%	0.005%	Up until 5 in 100k
C	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

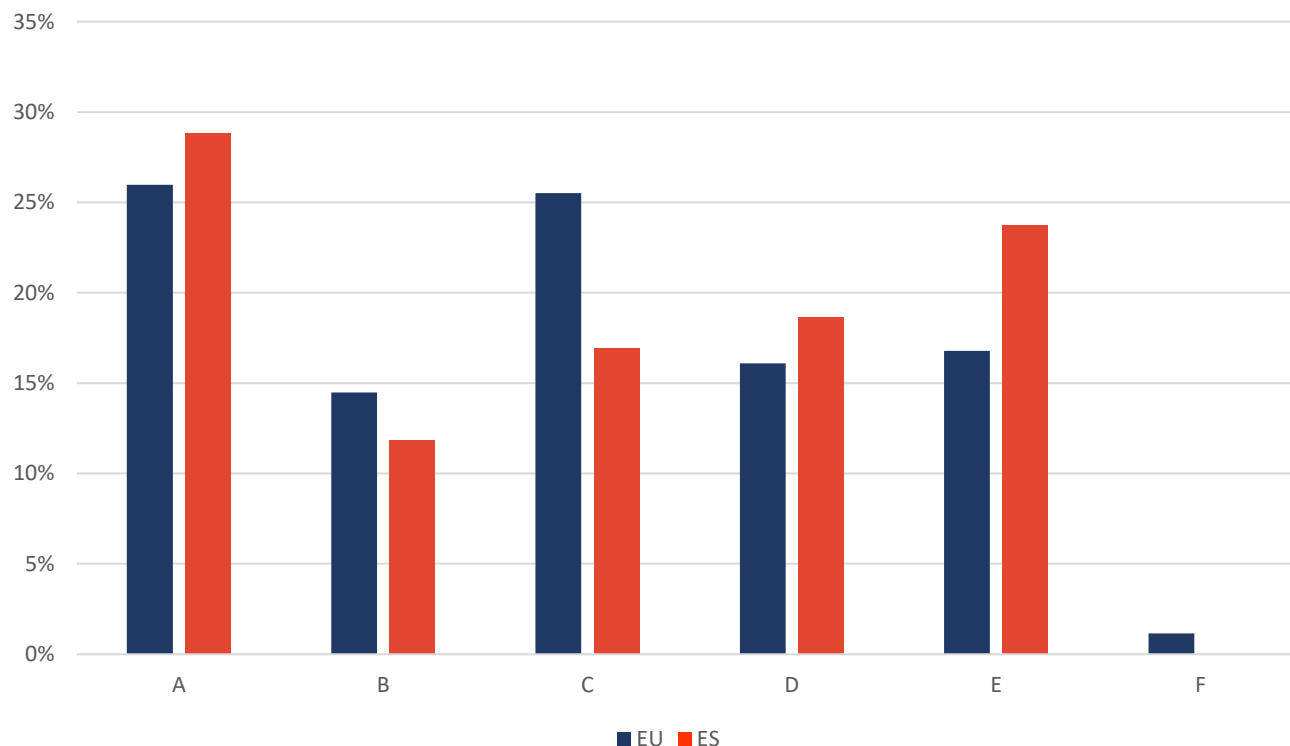
DATA QUALITY - DEVELOPMENT ECB TEMPLATE VS ESMA TEMPLATE



The quality of the data in the ESMA reporting templates submitted in Q4 2022 was comparable to the quality of the data in ECB reporting templates submitted in EDW in Q4 2014.

DATA QUALITY SCORE (DQS) DISTRIBUTION EU VS SPAIN

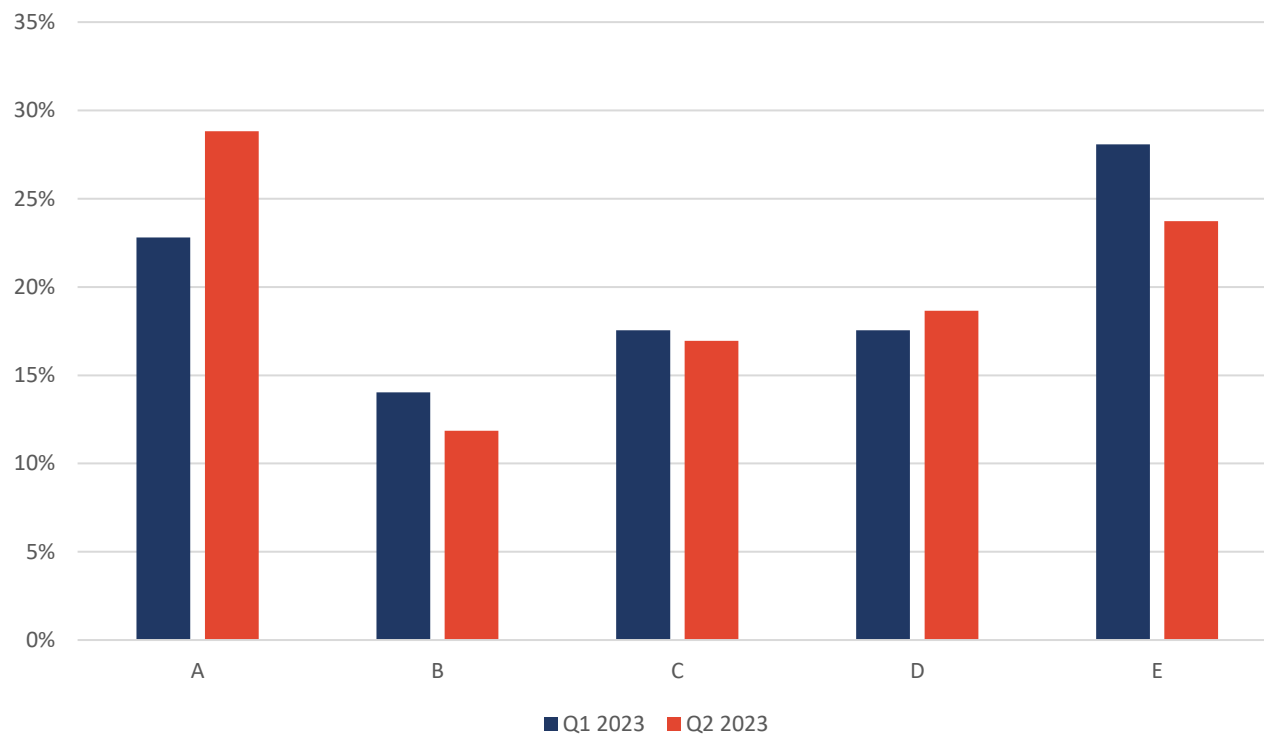
Distribution of DQS for ESMA templates (EU vs Spain)



DQS	EU	ES
A	26%	29%
B	14%	12%
C	26%	17%
D	16%	19%
E	17%	24%
F	1%	0%
Total	100%	100%

DATA QUALITY SCORE (DQS) DISTRIBUTION SPAIN Q1 2023 VS Q2 2023

Distribution of DQS for ESMA Templates - Spain Q1 2023 vs Q2 2023



DQS	Q1 2023	Q2 2023
A	23%	29%
B	14%	12%
C	18%	17%
D	18%	19%
E	28%	24%
Total	100%	100%

MAIN DRIVERS OF THE DQS IN SPAIN

Only a few fields contribute to the highest number of data quality issues

Top 10	ESMA Field	No. of loans
1	Current Principal Balance	2,841,505
2	Origination Channel	244,376
3	Redemption Date	140,599
4	Credit Impaired Obligor	108,131
5	Interest Rate Cap	58,103
6	Original Valuation Amount	29,400
7	Original Loan-To-Value	15,929
8	Date of Repurchase	14,157
9	Interest Revision Date 1	11,900
10	Interest Revision Date 2	11,883

Top 10	ESMA Field	No. deals
1	Number Of Days In Arrears	32
2	Current Principal Balance	20
3	Maturity Date	16
4	Redemption Date	12
5	Default Amount	11
6	Current Loan-To-Value	9
7	Origination Channel	8
8	Original Loan-To-Value	6
9	Original Valuation Amount	6
10	Interest Rate Cap	6

- Current Principal Balance with 'count zero' (CZ) problem
- Origination Channel with inappropriate use of ND5
- Performance-related fields are not the major problem when looking at number of loans, but many deals suffer in data quality in those fields

MOST IMPACTED FIELDS (INCLUDING DATA QUALITY PLUS RULES)

- Inappropriate use of ND5 is a widespread issue across all cash flow relevant fields
- Significant use of the list field option "Other" (OTH) requires further clarification

Cash Flow relevant data fields	CROSS TEMPLATE	UNUSUAL ZEREOES	INTER-FIELD CHECKS	ND5	NEGATIVE VALUES	USE OF "OTHER"	UNUSUAL DATES	UNUSUAL HIGH VAL	UNUSUAL LOW VAL	Grand Total
Current Interest Rate Margin		3,222,359		3,803,377	7,639			33	99,846	7,133,254
Current Interest Rate		3,624,413		1,268,152	22,366			459,007	180,472	5,554,410
Current Principal Balance	117	4,384,816	24,101	5,640	222,869			663,582		5,301,125
Current Interest Rate Index				37,557		3,321,913				3,359,470
Current Interest Rate Index Tenor				590,502		2,298,848				2,889,350
Amortisation Type						1,963,987				1,963,987
Scheduled Interest Payment Frequency				79,182		861,350				940,532
Maturity Date				199,817			181			199,998
Original Principal Balance		6		173,445	1					173,452
Interest Rate Type				9,005		19,475				28,480
Grand Total	117	11,231,594	24,101	6,166,677	252,875	8,465,573	181	1,122,622	280,318	27,544,058

- Zero values or negative values as interest rate and interest rate margin might be correct but could be worth clarifying
- Unusually high & unusually low values are often decimal point issues

ECB/CEPH LETTER TO EDW

...the CEPH operating team has detected various issues affecting the quality, accuracy, and completeness of the loan-level data reported through ESMA data templates...



ment on the changes to the Eurosystem's loan-level data requirements, eligible 1 to provide information to the Eurosystem according to the procedures and 2 of the Commission Delegated Regulation (EU) 2020/1224. Consequently, Eurosystem to perform its assessment on the eligibility of the ABSs under the mework are the data collected through the templates developed by ESMA.

the CEPH operating team has detected various issues affecting the quality, ss of the loan-level data reported through ESMA data templates since late 2021 3 issuers' attention to. Specifically, we have noted a large number of fields which ch as inadequate use of "no data" and "other" categories, negative values, or

inter-field inconsistencies), which prevent the calculation of reliable cash flows for valuation purposes.

Additionally, we would like to remind issuers that climate-related fields, although allowing "no data" answers, are potentially useful for valuation purposes, and as such to encourage them to already collect and provide the information.

Considering EDW's role within the Eurosystem Collateral Framework and as a registered EU securitisation repository, the ECB together with CEPH would invite EDW to undertake a set of initiatives to help improving the data quality. As a means of ensuring that the quality of the loan-by-loan data is adequate, EDW could consider engaging in the following actions:

ive data providers with the aim of highlighting een identified for a potential correction of the

BS issuers or their respective data providers if

s related to the performance of the underlying

tance on a quarterly basis, on the progress on ction basis.

contact the ECB (Andres Manzanares andres.manzanares@ecb.europa.eu) or CEPH (Emmanuelle

Yours faithfully,


Fernando Manar
Director, DRM
ECB


Thomas Vlassopoulos
Deputy Director General, DGM
ECB


Marc Baran
Directeur, DRCO
BdF

...we would like to remind issuers that climate-related fields, ..., are potentially useful for valuation purposes, and as such encourage them to already collect and provide the information.

EDW'S ACTIVITIES WITH ABS REPORTING ENTITIES

ADELINA ASANI, EUROPEAN DATAWAREHOUSE

RULES BASED ANALYSIS OF DATA SUBMISSIONS

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 that lead to a rejection of a template submission
- **[WARN]** → Rules developed by EDW that indicates a potential data quality issue (regulatory requirement to define additional rules)
- **[DATA QUALITY PLUS]** → Voluntary 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

EDW DEAL REPORT BASED ANALYSIS

Comprehensive deal report highlights gaps and data quality issues at a glance in each section

BOND REPORT

	Class A Notes	Class B Notes	Class C Notes	Class D Notes	Class E Notes	Class F Notes
ISIN	XS2473716210	XS2473716723	XS2473717028	XS2473717457	XS2473717614	XS2473718000
Type	Other	Other	Other	Other	Other	Other
Cur	EUR	EUR	EUR	EUR	EUR	EUR
Original Balance	119,200,000	38,300,000	23,600,000	13,500,000	12,400,000	4,000,000
Current Balance	80,784,973.70	25,956,916.88	15,994,340.43	9,149,304.91	8,403,805.99	2,710,905.16
Issue Date	2022-05-25	2022-05-25	2022-05-25	2022-05-25	2022-05-25	2022-05-25
Maturity Date	2031-07-18	2031-07-18	2031-07-18	2031-07-18	2031-07-18	2031-07-18
IPD	2022-12-19	2022-12-19	2022-12-19	2022-12-19	2022-12-19	2022-12-19
Paym.Freq	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
Current Coupon (%)	0.02	0.03	0.04	0.05	0.06	0.08
Cur. Int.Rate Mrgn/Sprd (%)	0.01	0.02	0.02	0.03	0.05	0.07
Step Up/Dn Coupon	-	-	-	-	-	-
Step Up/Dn Date	-	-	-	-	-	-
Coupon Floor (%)	-	-	-	-	-	-
Coupon Cap (%)	-	-	-	-	-	-
Current Int. Rate Index	Euribor	Euribor	Euribor	Euribor	Euribor	Euribor
Next Call Date	-	-	-	-	-	-
Next Put Date	-	-	-	-	-	-
Curr.Atch Point (%)	47.39	30.48	20.16	16.71	12.97	10.41
Orgl.Atch Point (%)	45.26	27.67	16.71	13.50	12.40	4.00
Cur. Cred Enhcmt (%)	47.16	30.19	19.94	16.71	12.97	10.41
Orig. Cred Enhcmt (%)	48.15	31.49	21.16	16.71	12.97	10.41
Protection Type	-	-	-	-	-	-
Unpaid P.Dfcy Ldgr Bal	0	0	0	0	0	0

BOND REPORT

SWAP INFORMATION

	Notional	Benchmark	Maturity
Interest Rate SWAP	289,927,011.90	EURi	2033-07-20

	Notional	Currency - Payer	Currency - Receiver	Exchange Rate	Maturity
Currency Rate SWAP	-	EUR	EUR	-	-

ACCOUNT INFORMATION

Account Type	Amortising?	Ccy	Target Balance	Actual Balance
Cash Reserve Account	No	EUR	2,800,000	2,800,000
Other Account	No	EUR	0	0

COUNTERPARTY INFORMATION

RISK

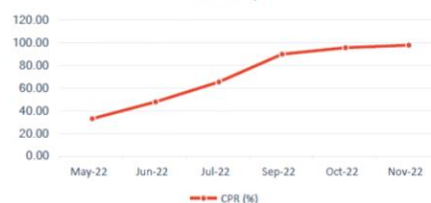
Role	Rating
Verification agent	-
Trustee	-
Suer	-
Account Bank	-
Allocation Agent	Aa2 (Moody's), NR (DBRS), P-1 (Moody's)
Paying Agent	-
Manager	-
Other	-
Interest Rate Swap Provider	Aa (low) (DBRS), Aa3 (Moody's), P-1

COLLECTIONS & RECOVERIES

Principal Collections	7,711,201.93
Interest Collections	1,297,410.37
Principal Recoveries	420,063.19
Interest Recoveries	13,194.01
Repurchased Exposures	0
Restructured Exposures	0
Defaulted Exposures	3,912,390.03
Defaulted Exposures CRR	3,912,390.03
Annualised CPR (%)	97.94
Annualised CDR (%)	0.25

Dilutions	0
Gross Charge-offs In The Period	0
Internal LGD Estimate (%)	-
Excess Spread	0
Is Excess Spread Trapped?	No
Current Overcollateralisation (%)	1.03
Risk Retention Method	First Loss Tranche
Risk Retention Holder	Seller
Risk Transfer Method - True Sale?	Yes
Risk Weight Approach	Standardised Approach
Revolving/ Ramp-Up Period End-Date	-

CPR History

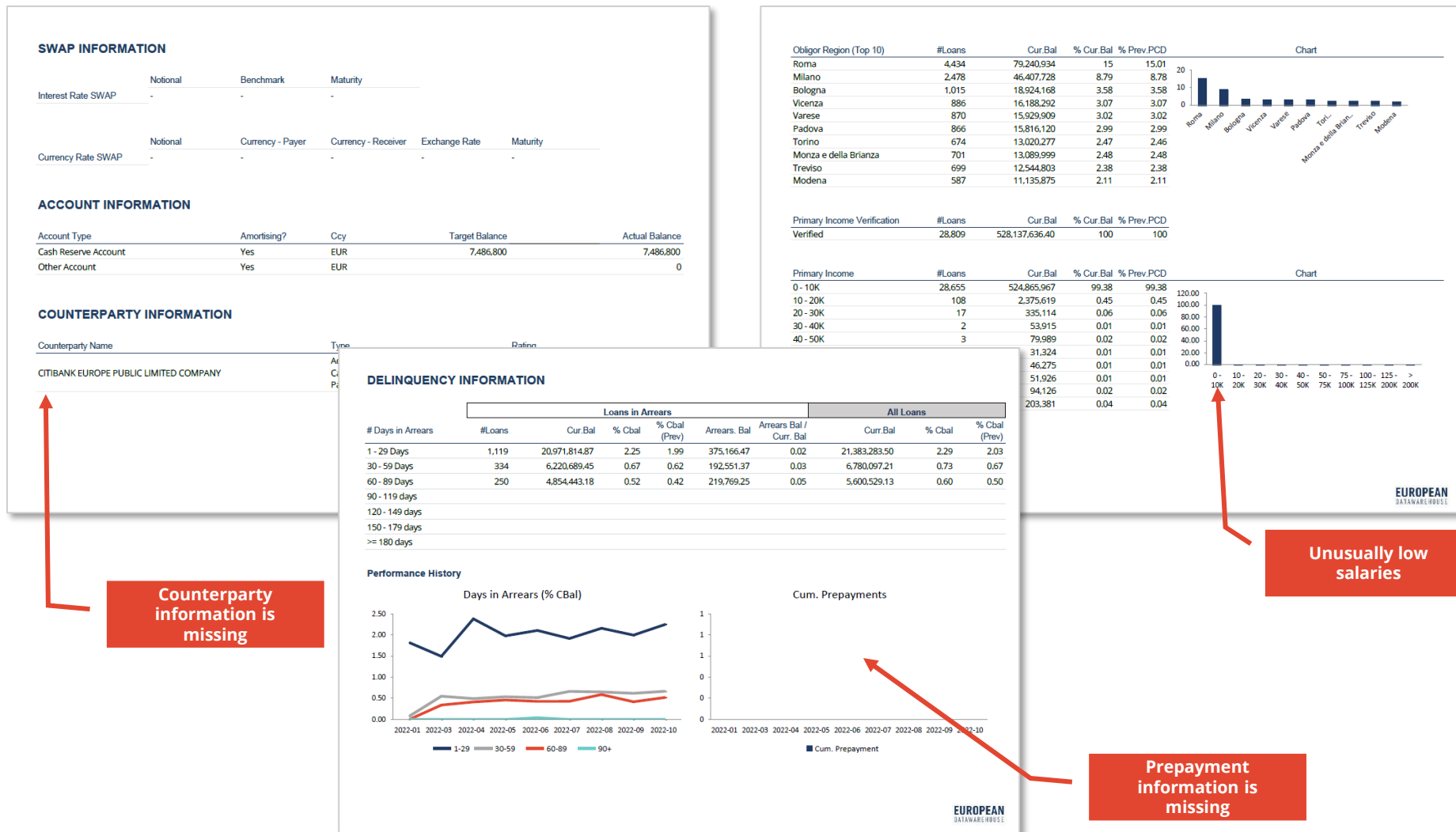


CDR History



EDW DEAL REPORT BASED ANALYSIS

Example of data quality issues easily discovered via deal report analysis



Counterparty information is missing

Unusually low salaries

Prepayment information is missing

DATA QUALITY TICKETING SYSTEM

Identified data quality issues are raised one by one in EDW's Ticketing System

Tickets ⁽⁶⁾									
<div> <div>Requiring Attention (0)</div> <div>Open & Pending (6)</div> <div>Closed (0)</div> <div>All (6)</div> </div>									
Deal Analyst: <input type="text"/>				Search: CMRSFR000083101120210 <input type="text"/>					
Ticket ID	Issue Category	Description	Primary Field	Data Provider	Data Owner	Priority	Status	Last Reply By	Last Reply Date
1009	CZ	[Data Quality Plus] Principal Collections In The Period (IVSS16) equal to zero.	IVSS16	Eurotitrisation	BPCE	Clarification	Open	ED	2023-03-09
1006	MIS	[Data Quality Plus] None of the Counterparty Type (SESP4) is equal to 'Arranger' (ARRG).	SESP4	Eurotitrisation	BPCE	Clarification	Open	ED	2023-03-08
1005	MIS	[Data Quality Plus] None of the Counterparty Type (SESP4) is equal to 'Originator' (ORIG).	SESP4	Eurotitrisation	BPCE	Clarification	Open	ED	2023-03-08
876	IS_COM	[WARN] Original Underlying Exposure Identifier (CMRL2) whose status in the previous submission was not defaulted, matured or repurchased (previous CMRL55 not in DFLT/NDFT/DTCR/DADB/REBR/REDF/RERE/RESS/REOT/RDMD) is missing in the current submission.	CMRL55	Eurotitrisation	BPCE	High	Open	ED	2023-02-17
873	CZ	[Data Quality Plus] Annualised Constant Prepayment Rate (IVSS22) equal to zero.	IVSS22	Eurotitrisation	BPCE	Clarification	Open	ED	2023-02-17
872	ND5	[DQS] Origination Channel (CMRL24) populated with ND5, for active loans.	CMRL24	Eurotitrisation	BPCE	Clarification	Open	ED	2023-02-17

Each ticket allows us to track the development of the finding; e.g. ticket creation, status, the entire communication

THE IMPORTANCE OF DATA QUALITY FOR MOODY'S CREDIT ANALYSIS

MARIA TURBICA, MOODY'S INVESTORS SERVICE

CLOSING REMARKS



Q&A

THANK YOU//CONTACT US

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