

Report AnaCredit

Methodology used for the comparison between “AnaCredit” and S 1.1/ S 1.5 (iBSI/iMIR) reports up to 2023/12

| Version 2.42

| November-May 2023-2024

Summary of versions

| Version | Date | Comments |
|------------|-------------------|---|
| 1.0.0 | 30 November 2020 | Initial Version |
| 1.0.1 | 23 February 2021 | Update of the definitions of the aggregates Minor update on the "Maturity" calculation |
| 1.0.2 | 5 August 2021 | The flag STTLD_FLG has been added to the iBSI instruments identification flags |
| 1.0.3 | 14 March 2022 | Minor general update |
| 1.0.4 | 1 June 2022 | Update of the DQI calculation of the iBSI comparison |
| 2.0 | 22 June 2022 | Update of the DQI calculation of the iBSI comparison |
| 2.1 | 13 November 2023 | Small updates and introduction of the flag "DBTR_RIAD_FND" |
| <u>2.2</u> | <u>2 May 2024</u> | <u>Correction of Bad loan flag in case of NEVS_DFLT_STTS_INSTRMNT=0</u> |

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1 Introduction

The European Central Bank (ECB) and the national central banks (NCB) have introduced a quarterly comparison report between AnaCredit and the balance sheet items report (iBSI / S 1.1). The main objective of these reports consists in evaluating the consistency between the reports and in verifying the completeness of AnaCredit data.

From 2021, the comparison report applies to all reporting agents reporting iBSI data to the BCL. Moreover, from 2021, a new comparison report between AnaCredit and interest rate data (iMIR / S 1.5) has been put in place as well¹.

In this context, the BCL wishes to inform its reporting agents of any inconsistencies detected in order to anticipate their corrections. It is important to note that the ECB relies on the reference data of the RIAD database for the classification of counterparties. It is therefore conceivable that DQIs considered acceptable at the BCL are not acceptable at the ECB. This discrepancy could possibly require a resubmission of the reporting agent.

2 Methodology

2.1 Basic principles

The comparison between AnaCredit and iBSI reports comprises fourteen items (“aggregates”) and one total item (“Total EA loans”). As for the comparison with iMIR data, three items (“weighted averages”) are considered. Indeed, data quality checks via data quality indicators (DQIs) on each of the items are only going to be applied from the reference month of March 2021 onwards.

The level of consistency of AnaCredit reports compared to iBSI / S 1.1 and iMIR / S 1.5 reports is assessed based on a DQI calculated by the BCL. The table below summarizes the qualitative requirements according to the reference periods.

¹ The comparison report between AnaCredit and iMIR will only be sent to banks submitting the S 1.5 report in Luxembourg.

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| AnaCredit | Methodology used for the comparison between “AnaCredit” and S 1.1/ S 1.5 (iBSI/iMIR) reports | 4 / 30 |
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| Items | From March 2021 | From September 2022 |
|----------------------------|------------------|------------------------|
| iBSI items 1-12 | 95% < DQI < 101% | 97.5% < DQI < 101% |
| iBSI item “Total EA loans” | 95% < DQI < 101% | 99.25% < DQI < 100.75% |
| iMIR item | DQI < 5% | DQI < 5% |

We would like to remind you that all attributes and acceptable values are described more in detail in [manual part II](#).

Please note that the threshold of 25 kEUR applied in AnaCredit does not exist in S 1.1 reporting. Therefore, the amount reported in AnaCredit should never be greater than the amount shown in report S 1.1.

2.2 Comparison with iBSI (S 1.1)

2.2.1 Calculation method

The aggregates calculated for the comparison of AnaCredit and iBSI data are described in this chapter.

AnaCredit instruments are broken down based on the following attributes:

- Country (CNTRY), where:
 - CNTRY_OBSRVD_AGNT = the country of residence of the observed agent
 - CNTRY_DBTR = the country of residence of the debtor
- Institutional sector (INSTTTLN_SCTR), where:
 - INSTTTLN_SCTR_DBTR = the debtor's institutional sector
- Original maturity (MTRY), where:

```

IF NEVS_DT_LGL_FNL_MTRTY = "0" THEN;
    IF TYP_INSTRMNT in {"Revolving credit other than overdrafts and credit card debt",
    "Overdraft", "Credit card debt", "Credit lines other than revolving credit"}
        OR TYP_INSTRMNT = "Trade receivables" AND CNTRY_OBSRVD_AGNT in {"FR",
        "IT", "AT"}
        OR TYP_INSTRMNT = "Reverse repurchase agreements" AND
        CNTRY_OBSRVD_AGNT = "AT"
        OR RPYMNT_RGHTS = "On demand or short notice"
    THEN MTRTY = "Up to 1 year";
    ELSE MTRTY = "Above 5 years";
ELSE IF DT_LGL_FNL_MTRTY - DT_STTLMNT <= 1 year THEN MTRTY = "Up to 1 year";
ELSE IF DT_LGL_FNL_MTRTY - DT_STTLMNT <= 5 years THEN MTRTY = "Over 1 year and
up to 5 years";
ELSE MTRTY = "Above 5 years";

```

- Type of instrument (TYP_INSTRMNT)

Similarly, the iBSI sub-aggregates are aggregated taking into account the following variables:

- Country
- Currency
- Sector
- Maturity

The sum of iBSI aggregable balance of instruments granted to counterparties resident in the euro area ("Total EA loans") corresponds to the sum of the 14 aggregates mentioned above minus aggregates 1.1 and 12.

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Thus, the AnaCredit-iBSI comparison will include the following 14 aggregates²:

| Item | Description | AnaCredit | S 1.1 (iBSI) | | | |
|------|---|--|--------------|------------|----------------------------------|--|
| | | Condition | Country | Currency | Sector | Maturity |
| 1. | Loans to domestic MFIs | CNTRY_DBTR = CNTRY_OBSRVD_AGNT AND INSTTNL_SCTR_DBTR IN {"S.121", "S.122", "S.123"} | LU | EUR XX2 | 31000 32100 32200 33000 | I000-01A I01A-02A I02A-05A I05A-999 |
| 1.1 | Loans to domestic central banks | CNTRY_DBTR = CNTRY_OBSRVD_AGNT AND INSTTNL_SCTR_DBTR = "S.121" | LU | EUR XX2 | 31000 | I000-01A I01A-02A I02A-05A I05A-999 |
| 2. | Loans to domestic general government | CNTRY_DBTR = CNTRY_OBSRVD_AGNT AND INSTTNL_SCTR_DBTR IN {"S.1311", "S.1312", "S.1313", "S.1314"} | LU | EUR XX2 | 11000 12000 | I000-01A I01A-02A I02A-05A I05A-999 |
| 4.1 | Loans to domestic NFCs, up to 1 year | CNTRY_DBTR. = CNTRY_OBSRVD_AGNT AND INSTTNL_SCTR_DBTR = "S11" AND MTRTY = "Up to 1 year" | LU | EUR XX2 | 21000 | I000-01A |
| 4.2 | Loans to domestic NFCs, over 1 year and up to 5 years | CNTRY_DBTR = CNTRY_OBSRVD_AGNT AND INSTTNL_SCTR_DBTR = "S11" AND MTRTY = "Over 1 year and up to 5 years" | LU | EUR XX2 | 21000 | I01A-02A I02A-05A |
| 4.3 | Loans to domestic NFCs, over 5 years | CNTRY_DBTR = CNTRY_OBSRVD_AGNT AND INSTTNL_SCTR_DBTR = "S11" AND MTRTY = "Above 5 years" | LU | EUR XX2 | 21000 | I05A-999 |
| 5. | Loans to other euro area MFIs (excluding Luxembourg) | CNTRY_DBTR <> CNTRY_OBSRVD_AGNT AND (CNTRY_DBTR IN {Euro area countries}) AND INSTTNL_SCTR_DBTR IN {"S.121", "S.122", "S.123"} | X3 | EUR XX2 | 31000 32100 32200 33000 | I000-01A I01A-02A I02A-05A I05A-999 |

² Loans to debtors belonging to the institutional sector S.15 are excluded from the comparison.

| | | | | | | |
|-----|---|---|----------|---------|--|--|
| 6. | Loans to other euro area general government (excluding Luxembourg) | CNTRY_DBTR <> CNTRY_OBSRVD_AGNT AND (CNTRY_DBTR IN {Euro area countries}) AND INSTTTLN_SCTR_DBTR IN {"S.1311", "S.1312", "S.1313", "S.1314"} | X3 | EUR XX2 | 11000 12000 | I000-01A I01A-02A I02A-05A I05A-999 |
| 8.1 | Loans to other euro area NFCs (excluding Luxembourg), up to 1 year | CNTRY_DBTR <> CNTRY_OBSRVD_AGNT AND CNTRY_DBTR IN {Euro area countries} AND INSTTTLN_SCTR_DBTR = "S.11" AND MTRTY = "Up to 1 year" | X3 | EUR XX2 | 21000 | I000-01A |
| 8.2 | Loans to other euro area NFCs (excluding Luxembourg), over 1 year and up to 5 years | CNTRY_DBTR <> CNTRY_OBSRVD_AGNT AND CNTRY_DBTR IN {Euro area countries} AND INSTTTLN_SCTR_DBTR = "S.11" AND MTRTY = "Over 1 year and up to 5 years" | X3 | EUR XX2 | 21000 | I01A-02A I02A-05A |
| 8.3 | Loans to other euro area NFCs (excluding Luxembourg), over 5 years | CNTRY_DBTR <> CNTRY_OBSRVD_AGNT AND CNTRY_DBTR IN {Euro area countries} AND INSTTTLN_SCTR_DBTR = "S.11" AND MTRTY = "Above 5 years" | X3 | EUR XX2 | 21000 | I05A-999 |
| 9. | Loans to euro area OFIs and non-MMF investment funds | CNTRY_DBTR IN {Euro area countries} AND INSTTTLN_SCTR_DBTR IN {"S.124", "S.125", "S.126", "S.127"} | LU X3 | EUR XX2 | 41000 42000 43000 44000 | I000-01A I01A-02A I02A-05A I05A-999 |
| 10. | Loans to EA ICPFs (euro area insurance corporations and pension funds) | CNTRY_DBTR IN {Euro area countries} AND INSTTTLN_SCTR_DBTR IN {"S.128", "S.129"} | LU X3 | EUR XX2 | 45000 46000 | I000-01A I01A-02A I02A-05A I05A-999 |
| 12. | Loans to the rest of the world | CNTRY_DBTR NOT IN {Euro area countries} | X4 | EUR XX2 | 11000 12000 21000 31000 32100 32200 33000 40000 | I000-01A I01A-02A I02A-05A I05A-999 |

2.2.2 Instruments excluded from iBSI calculation

It is important to note that only instruments eligible for iBSI and meeting a certain level of quality are considered in the calculation of aggregates. In this regard, flags have been created in order to i) identify iBSI instruments and to ii) check the data quality. The methodology is described in detail below.

2.2.2.1 iBSI instruments identification flags

Four flags are calculated to determine the eligibility of instruments for the calculation of iBSI aggregates and they can take the value of:

- 1 (included for the calculation of iBSI aggregates)
- 0 (excluded for the calculation of iBSI aggregates)
- -1 (attribute missing)

Instruments for which at least one flag equals 0 or -1 are excluded from the calculation of the aggregates. These instruments are therefore listed in the excluded instruments sheet. The data should be checked and, if necessary, corrected.

- IS_NOT_FDCRY

Only non-fiduciary instruments are considered in the calculation of iBSI aggregates.

```
IF FDCRY = "Non-fiduciary instrument"  

THEN IS_NOT_FDCRY = 1;  

ELSE IF FDCRY = "Fiduciary instrument";  

THEN IS_NOT_FDCRY = 0;  

ELSE IS_NOT_FDCRY = -1;
```

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- RCGNTN_FLG

Fully derecognized instruments are not considered in the calculation of iBSI aggregates, except for “intra-company” instruments.

```
IF RCGNTN_STTS = "Entirely recognised" OR RCGNTN_STTS = "Recognised to the extent of the institution's continuing involvement"
THEN RCGNTN_FLG = 1;
ELSE IF RCGNTN_STTS = "Entirely derecognised"
THEN RCGNTN_FLG = 0;
ELSE RCGNTN_FLG = -1;
```

- INTR_CMPNY_FLG

All “intra-company” instruments are included in the calculation of the iBSI aggregates, including fully derecognized instruments.

```
IF HD_OFFC_UNDRT_ID_DBTR is not NULL AND HD_OFFC_UNDRT_ID_DBTR = HD_OFFC_UNDRT_ID_OA
THEN INTR_CMPNY_FLG = 1;
ELSE INTR_CMPNY_FLG = 0;
```

Where:

- HD_OFFC_UNDRT_ID_DBTR = debtor's head office identifier
- HD_OFFC_UNDRT_ID_OA = observed agent's head office identifier

- NON_TRDTNLLY_SEC_FLG

This flag on traditional securitisation does not apply to Luxembourgish observed agents.

```
IF CNTRY_OBSRVD_AGNT = "Ireland" AND TYP_SCRTSTN = "Traditional securitisation"
THEN NON_TRDTNLLY_SEC_FLG = 0;
ELSE NON_TRDTNLLY_SEC_FLG = 1;
```

- STTLD_FLG

Instruments, which have not been settled, are not considered in the calculation of iBSI aggregates.

```
IF DT_STTLMNT <= DT_RFRNC AND NEVS_DT_STTLMNT <> "0"
THEN STTLD_FLG = 1;
ELSE STTLD_FLG = 0;
```

Finally, the flag on the iBSI eligibility of an instrument in AnaCredit is calculated taking into account the results of the four flags described above:

```
IF IS_NOT_FDCRY = 1 AND NON_TRDTNLLY_SEC_FLG = 1 AND (RCGNTN_FLG = 1 OR
INTR_CMPNY_FLG = 1) AND STTLD_FLG = 1
THEN IS_IBSI_INSTRMNT = 1;
ELSE IS_IBSI_INSTRMNT = 0;
```

All instruments whose flag “IS_IBSI_INSTRMNT” is equal to 1 are taken into account when calculating iBSI aggregates. Conversely, instruments with a flag equal to 0 or -1 are excluded from the calculation. These are listed in the feedback “BSI_EXC_INSTRMNT” (cf. chapter 2.5.1.2 below).

2.2.2.2 Data quality flags

Similar to the iBSI instrument identification flags described above, the data quality flags are first calculated individually before they are added to the global flag. The latter indicates whether the data quality of an instrument is sufficient to be included in the iBSI aggregates. The data quality flags can take three values:

- 1 (the quality is good)
No correction is expected.
- 0 (quality cannot be measured)
It is up to the reporting agent to verify the data if a difference is noted in the DQI.
- -1 (an error was detected)

Instruments for which at least one flag equals 0 or -1 are excluded from the calculation of the aggregates. These instruments are therefore listed in the excluded instruments sheet. The data should be checked and, if necessary, corrected.

- IS_ACCNTNG_RPRTD

This flag checks if accounting data has been reported.

```
IF INSTRMNT.INSTRMNT_ID EXISTS IN ACCNTNG.INSTRMNT_ID
THEN IS_ACCNTNG_RPRTD = 1;
ELSE IS_ACCNTNG_RPRTD = -1;
```

- IS_PRTLY_TRNSFRD

This flag checks if the instrument has been partially transferred.

```
IF OTSTNDNG_NMNL_AMNT > TRNSFRRD_AMNT > 0
THEN IS_PRTLY_TRNSFRD = 1;
ELSE IF OTSTNDNG_NMNL_AMNT = TRNSFRRD_AMNT OR TRNSFRRD_AMNT = 0 OR
TRNSFRRD_AMNT is NULL
THEN IS_PRTLY_TRNSFRD = 0;
ELSE IS_PRTLY_TRNSFRD = -1;
```

- IS_JNT_LBLTY_RPRTD_ALL

This flag checks whether joint liabilities have been reported for each pair instrument-debtor.

```
IF JNT_LBLTY_AMNT is not NULL
THEN IS_JNT_LBLTY_RPRTD_ALL_PRP = 1;
ELSE IS_JNT_LBLTY_RPRTD_ALL_PRP = -1;
```

The flag below checks that if no joint liability is reported, the number of debtors linked to the instrument is equal to 1. If this condition is not met (i.e. more than one debtor is linked to the instrument), then the flag is equal to -1.

| | | |
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```

IF min(IS_JNT_LBLTY_RPRTD_ALL_PRP) = 1
THEN IS_JNT_LBLTY_RPRTD_ALL = 1;
ELSE IF min(IS_JNT_LBLTY_RPRTD_ALL_PRP) = -1 AND NMBR_DBTRS = 1
THEN IS_JNT_LBLTY_RPRTD_ALL = 0;
ELSE IS_JNT_LBLTY_RPRTD_ALL = -1;

```

Where:

- NMBR_DBTRS = the number of debtors in an instrument
 - IS_JNT_LBLTY_CMPLT
- This flag checks if the sum of joint liability amount is greater or equal to the outstanding nominal amount for multi-debtor instruments.

```

IF NMBR_DBTRS > 1 AND IS_JNT_LBLTY_RPRTD_ALL = -1
THEN IS_JNT_LBLTY_CMPLT = -1;
ELSE IF NMBR_DBTRS > 1 AND sum(JNT_LBLTY_AMNT) => OTSTNDNG_NMNL_AMNT
THEN IS_JNT_LBLTY_CMPLT = 1;
ELSE IF NMBR_DBTRS > 1 AND sum(JNT_LBLTY_AMNT) < OTSTNDNG_NMNL_AMNT
THEN IS_JNT_LBLTY_CMPLT = 0;

```

- IS_JNT_LBLTY_CN_ONA

This flag checks whether the maximum amount of all joint liabilities of an instrument is less than or equal to the outstanding nominal amount.

```

IF max(JNT_LBLTY_AMNT) <= OTSTNDNG_NMNL_AMNT
THEN IS_JNT_LBLTY_CN_ONA = 1;
ELSE IS_JNT_LBLTY_CN_ONA = -1;

```

- IS_DBTR_NOT_THE_OA

This flag verifies that the observed agent³ is not the debtor of the instrument.

```
IF DBTR_RIAD <> OBSRVD_AGNT_CD
THEN IS_DBTR_NOT_THE_OA = 1;
ELSE IS_DBTR_NOT_THE_OA = -1;
```

Where:

- DBTR_RIAD = RIAD identifier of the debtor

- IS_INSTTNL_SCTR_RPRTD

This flag checks whether the institutional sector of the debtor has been reported.

```
IF INSTTNL_SCTR_DBTR is not NULL
THEN IS_INSTTNL_SCTR_RPRTD = 1;
ELSE IS_INSTTNL_SCTR_RPRTD = -1;
```

Where:

- INSTTNL_SCTR_DBTR = institutional sector of the debtor

- IS_DBTR_CNTRY_RPRTD

This flag checks whether the country of residence of the debtor has been reported.

```
IF CNTRY_DBTR is not NULL
THEN IS_DBTR_CNTRY_RPRTD = 1;
ELSE IS_DBTR_CNTRY_RPRTD = -1;
```

Where:

- CNTRY_DBTR = country of residence of the debtor

³ The attribute “OBSRVD_AGNT_CD” depicts the RIAD identifier of the observed agent.

| | | |
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- IS_DT_STTLMNT_RPRTD

This flag checks whether the date of settlement has been reported if the date of legal final maturity.

```
IF NEVS_DT_LGL_FNL_MTRTY is NULL AND DT_STTLMNT is NULL
THEN IS_DT_STTLMNT_RPRTD = 0;
ELSE IS_DT_STTLMNT_RPRTD = 1;
```

- IS_DT_LGL_FNL_MTRTY_RPRTD

This flag checks whether the date of legal final maturity has been reported.

```
IF DT_LGL_FNL_MTRTY is NULL AND NEVS_DT_LGL_FNL_MTRTY is NULL
THEN IS_DT_LGL_FNL_MTRTY_RPRTD = -1;
ELSE IS_DT_LGL_FNL_MTRTY_RPRTD = 1;
```

All of the flags described above are used to identify quality issues. If one of these flags is equal to -1, the data quality for a specific instrument is insufficient and the instrument is excluded from the iBSI calculation. The data quality is summarized in the following flag:

```
IF IS_ACCNTNG_RPRTD = -1 OR IS_PRTLY_TRNSFRD = -1
OR IS_JNT_LBLTY_RPRTD_ALL = -1 OR IS_JNT_LBLTY_CMPLT = -1
OR IS_JNT_LBLTY_CN_ONA = -1 OR IS_DBTR_NOT_THE_OA = -1
OR IS_INSTTNL_SCTR_RPRTD = -1 OR IS_DBTR_CNTRY_RPRTD = -1
OR IS_DT_STTLMNT_RPRTD = 0 OR IS_DT_LGL_FNL_MTRTY_RPRTD = -1
OR VLDTN_RLS = -1
THEN DQ_FLG = -1;
ELSE DQ_FLG = 1;
```

In addition to the flags calculated above, some validation rules are also provided in the form of flags (grouped under “VLDTN_RLS” in the box above). This is the result of data quality checks on attributes necessary for the mapping of a counterparty to RIAD. If one of these flags is equal to -1, then the counterparty cannot be associated with a counterparty in RIAD and the instruments linked to these counterparties are excluded from the calculation of the aggregates.

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Finally, the feedback sheet “BSI_EXC_INSTRMNT” also contains the flag “DBTR_RIAD_FND”, which tells the reporting agent if a RIAD code has been found for the counterparty or not. In the case where no code was found, the reporting agent should verify the identification of the counterparty and in the case where no error is spotted contact sig@bcl.lu, with the concerned counterparty.

2.2.3 Solution indications

There are many sources of inconsistency between reports. Below are listed some recurring errors.

1 Insufficient data quality

Insufficient data quality is highlighted by the flags in chapter 2.2.2.2. Data with errors should be analysed first. As a first step, it is recommended to focus on instruments with a high outstanding nominal amount. In fact, the more the quality of an instrument with a high outstanding amount improves, the greater the impact on the DQI. It is for this reason that the instruments are sorted in descending order compared to the outstanding nominal amount in the feedback “BSI_EXC_INSTRMNT”.

The most frequent quality deficiencies are as follows:

- Country not reported
- National identifier not reported
- National identifier type not reported and/or inconsistent national identifier
- The sum of the outstanding nominal amounts is equal to the sum of the transferred amounts

2 The portfolio is incomplete (non-reported instruments)

If the total iBSI aggregable balance of instruments listed in the excluded instruments sheet does not explain the difference between iBSI and AnaCredit aggregates, then it is very likely that part of the AnaCredit portfolio has not been reported.

However, inconsistencies can be detected without requiring corrections. These are mainly reporting agents whose portfolio contains a large number of instruments with an outstanding nominal amount of less than 25 kEUR.

We would also like to remind you that intra-group and interbank instruments as well as positions with the BCL must be reported in AnaCredit.

3 Some counterparties were broken down incorrectly (diverging institutional sector or country)

When inconsistencies detected at the level of the sub-aggregates are substantial while the totals are very similar, it is very likely that the classification of the counterparties is not correct (e.g. a non-financial corporation reported with an institutional sector “S.121”).

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4 Some instruments were broken down incorrectly (diverging maturities)

The maturity of the instruments is calculated by subtracting the settlement date (DT_STTLMNT) from the legal final maturity date (DT_LGL_FNL_MTRTY). If the maturity aggregates (sections 4.1, 4.2, 4.3, 8.1, 8.2 and 8.3) present inconsistencies, we encourage you to check the two corresponding attributes and align them with the deadlines calculated for the iBSI report.

2.3 Comparison with iMIR (S 1.5)

2.3.1 Calculation method

The AnaCredit-iMIR comparison compares the average interest rates, weighted by the iBSI aggregable balance⁴:

$$\frac{\sum(BSI_AGGRGBL_BLNC * ANNLSD_AGGRD_RT)}{\sum(BSI_AGGRGBL_BLNC)}$$

These weighted averages are limited to euro-denominated instruments, the debtors of which are non-financial corporations resident in the euro area. Instruments are broken down according to their initial maturity, which consists of the difference between the “Legal final maturity date” and the “Settlement date”. The table below shows the three items:

| Item | Description | AnaCredit Condition | S 1.5 (iMIR) | | | |
|------|---|--|--------------|----------|--------|----------|
| | | | Country | Currency | Sector | Maturity |
| 1. | Loans to EA NFCs, up to 1 year | CNTRY_DBTR IN {"Euro area"} AND INSTTNL_SCTR_DBTR = "S.11" AND MTRTY = "Up to 1 year" | X2 | EUR | 21000 | I000-01A |
| 2. | Loans to EA NFCs, over 1 year and up to 5 years | CNTRY_DBTR IN {"Euro area"} AND INSTTNL_SCTR_DBTR = "S.11" AND MTRTY = "Over 1 year and up to 5 years" | X2 | EUR | 21000 | I01A-05A |
| 3. | Loans to EA NFCs, over 5 years | CNTRY_DBTR IN {"Euro area"} AND INSTTNL_SCTR_DBTR = "S.11" AND MTRTY = "Above 5 years" | X2 | EUR | 21000 | I05A-999 |

⁴ In its simplest form, the iBSI aggregable balance consists of the outstanding nominal amount. The detailed calculation of the aggregable balance can be found in annex 4.3 of this document.

2.3.2 Instrument excluded from iMIR

Similar to the iBSI comparison, some of the instruments are not taken into account in the calculation of iMIR weighted averages (in addition to the instruments already excluded from the three categories detailed above). The flags calculated in the iBSI comparison are also applicable to the iMIR comparison.

2.3.2.1 iMIR instruments identification flags

Regarding the identification of instruments eligible for the iMIR calculation, an additional flag must however be added:

- BD_LN_FLG

This flag identifies instruments, which are considered uncollectible. This is based on the default status of the counterparty or of the instrument respectively.

```

IF DFLT_STTS_INSTRMNT is not NULL or NEVS_DFLT_STTS_INSTRMNT = 0 THEN DO;

IF DFLT_STTS_INSTRMNT = "Default because both unlikely to pay and more than
90/180 days past due" OR DFLT_STTS_INSTRMNT = "Default because unlikely to
pay" OR DFLT_STTS_INSTRMNT = "Default because more than 90/180 days past
due" THEN BD_LN_FLG = 1;

ELSE IF NEVS_DFLT_STTS_INSTRMNT = 0 AND (DFLT_STTS_DBTR = "Default
because both unlikely to pay and more than 90/180 days past due" OR DFLT_STTS_
DBTR = "Default because unlikely to pay" OR DFLT_STTS_DBTR = "Default
because more than 90/180 days past due") THEN BD_LN_FLG = 1;

ELSE BD_LN_FLG = 0;

END;

ELSE DO;

IF FRBRNC_STTS = "Forborne: instruments with modified interest rate below market
conditions" OR PRFRMNG_STTS = "Non-performing" OR IMPRMNT_STTS = "Stage
3 (IFRS)" OR IMPRMNT_STTS = "Specific allowances (GAAP)" THEN BD_LN_FLG
= 1;

ELSE BD_LN_FLG = 0;

END;

```

Finally, a flag on the iMIR eligibility of an AnaCredit instrument is calculated taking into account the results of the four flags described during the iBSI comparison and the additional BD_LN_FLG flag:

```
IF IS_NOT_FDCRY = 1 AND NON_TRDTNLLY_SEC_FLG = 1 AND (RCGNTN_FLG = 1 OR  
INTR_CMPNY_FLG = 1) AND STTLD_FLG = 1 AND BD_LN_FLG = 0  
THEN IS_IMIR_INSTRMNT = 1;  
ELSE IS_IMIR_INSTRMNT = 0;
```

All the instruments whose flag “IS_IMIR_INSTRMNT” is equal to 1 are taken into account when calculating the iMIR weighted averages. Conversely, the instruments whose flag is equal to 0 or -1 are excluded from the calculation and listed in the “MIR_EXC_INSTRMNT” feedback (see chapter 2.5.1.2 below).

2.3.2.2 Data quality flags

The data quality flags calculated during the iBSI comparison (see chapter 2.2.2.2) also apply to the iMIR comparison.

2.3.3 Solution indications

It is recommended to identify and then resolve any inconsistencies detected during the AnaCredit-iBSI comparison before starting the AnaCredit-iMIR comparison. There are many sources of inconsistency between reports. The flags on data quality defined in chapter 2.2.2.2 also apply to the iMIR comparison. Among the most frequent quality deficiencies, the interest rate reported in percentage format and not in decimal format should be considered.

2.4 Reports

2.4.1 Feedbacks provided

During the AnaCredit-iBSI-iMIR comparison, one file is made available to reporting agents. This .xlsx file includes two worksheets:

- **iBSI_Overview** (overview of iBSI DQI results)
- **iMIR_Overview** (overview of iMIR DQI results)

The feedback file can also contain four additional worksheets, namely:

- **iBSI_EXC_INSTRMNT** (list of instruments excluded from iBSI calculation)
- **iBSI_INC_INSTRMNT** (list of instruments included in the iBSI calculation)
- **iMIR_EXC_INSTRMNT** (list of instruments excluded from the iMIR calculation)
- **iMIR_INC_INSTRMNT** (list of instruments included in the iMIR calculation)

In the meantime, the BCL will include these four spreadsheets but they will only contain the following attributes:

- OBSRVD_AGNT_CD,
- DT_RFRNC,
- T1M_MSG_ID,
- T2M_MSG_ID,
- T2Q_MSG_ID,
- REF_MSG_ID,
- CNTRCT_ID,
- INSTRMNT_ID,
- all flags described in chapters 2.2.2 and 2.3.2.

The two types of “Overview” and “Excluded” worksheets are described in more detail below.

2.4.1.1 Results of the calculation of aggregates / weights

The “Overview” sheet includes the aggregates / weighted averages calculated for AnaCredit and iBSI / iMIR as well as the DQIs calculated on the comparison.

An example of an iBSI comparison table is available in Annex 4.2.1. In order to facilitate the interpretation of this table, the DQIs are coloured as follows:

| | | |
|-----------|--|---------|
| AnaCredit | Methodology used for the comparison between “AnaCredit” and S 1.1/ S 1.5 (iBSI/iMIR) reports | 21 / 30 |
|-----------|--|---------|

- Green: the DQI is below the required threshold and no correction is expected
- Yellow: the DQI is above the required threshold. Correction is not required. However, reporting agents are strongly encouraged to correct these sub-aggregates in anticipation of more extensive requirements in 2021.
- Red: the DQI is above the required threshold. Correction is required. For the year 2020, no DQI is considered critical and therefore no correction is required.⁵

2.4.1.2 List of instruments excluded from the calculation of aggregates

The “Excluded” sheet lists all the instruments excluded from the calculation of aggregates / weighted averages based on the flags described above. An instrument is added to the list when at least one of the two flags DQ_FLG or IS_IBSI_INSTRMNT / IS_IMIR_INSTRMNT is equal to 0 or -1.

In addition to the aforementioned flags, the list includes attributes to better identify inconsistencies between AnaCredit and iBSI / iMIR:

- OBSRVD_AGNT_CD
- DT_RFRNC
- CNTRCT_ID
- INSTRMNT_ID

The list is ordered as follows:

- 1 IS_IBSI_INSTRMNT / IS_IMIR_INSTRMNT, in descending order
- 2 DQ_FLG, in ascending order
- 3 BSI_AGGRGBL_BLNC, in descending order

Therefore, it is recommended to analyse the first observations in the list first, which are most likely to have the greatest impact on the aggregates. An example of the excluded instruments table can be found in Annex 4.2.

⁵ Except for credit institutions in the “iBSI” sample: LUB00001, LUB00002, LUB00003, LUB00007, LUB00008, LUB00009, LUB00014, LUB00019, LUB00036, LUB00107 and LUB00338.

| | | |
|-----------|--|---------|
| AnaCredit | Methodology used for the comparison between “AnaCredit” and S 1.1/ S 1.5 (iBSI/iMIR) reports | 22 / 30 |
|-----------|--|---------|

2.4.2 Communication frequency and delay

The comparison reports are sent quarterly, regardless of resubmissions sent by reporting agents. Ad hoc reports can be generated upon request from reporting agents.

2.4.3 Revision deadlines

In an initial phase, the BCL will not impose any revision deadline. Reporting agents are encouraged to cooperate and analyse the inconsistencies detected within a reasonable time (+/- 3 months). In addition, before proceeding to a resubmission (regardless the type of report), reporting agents are asked to confirm by email the reports and the reference periods to be resubmitted. Please note that a modification or even a correction in report S 1.1 may also require modifications in the report S 2.5.

Future submissions should already take into account any inconsistencies detected.

3 Contact data at the BCL

For any question related to the AnaCredit report, please contact the AnaCredit team at the BCL (reporting.anacredit@bcl.lu).

For any question, which concerns more precisely referential data, please contact the referential data team at the BCL (sig@bcl.lu).

| | | |
|-----------|--|---------|
| AnaCredit | Methodology used for the comparison between “AnaCredit” and S 1.1/ S 1.5 (iBSI/iMIR) reports | 23 / 30 |
|-----------|--|---------|

4 Annexes

4.1 Glossary

| | |
|-------|---|
| DQI | Data Quality Indicator |
| EA | Euro area |
| ECB | European central bank |
| iBSI | Individual balance sheet items statistics (S 1.1 and S 2.5 reports in Luxembourg) |
| ICPFs | Insurance Corporations and Pension Funds |
| iMIR | Individual MFI interest rate statistics (S 1.5 reports in Luxembourg) |
| MFI | Monetary and Financial Institutions |
| MMF | Money Market Funds |
| NCB | National central bank |
| NFC | Non-financial corporation |
| OFI | Other Financial Intermediaries |

4.2 Examples of feedback reports

4.2.1 Example iBSI / AnaCredit comparison (“Overview”)

| Observed Agent: LUB00XXX | | | | | | | | | |
|---|-----------|-------------|----------|-----------|-------------|----------|-----------|-------------|----------|
| Aggregates per report and per reference date (in million €) | 202103 | | | 202106 | | | 202109 | | |
| | AnaCredit | S1.1 Report | DQI | AnaCredit | S1.1 Report | DQI | AnaCredit | S1.1 Report | DQI |
| 1. Dom MFIs | 380,00 | 380,00 | 100,00 % | 380,00 | 380,00 | 100,00 % | 80,00 | 380,00 | 21,05 % |
| 1.1 Dom central banks | 300,00 | 300,00 | 100,00 % | 300,00 | 300,00 | 100,00 % | 0,00 | 300,00 | 0,00 % |
| 2. Dom General government | | | | | | | | | |
| 4.1 Dom NFCs, up to 1 year | | | | | | | | | |
| 4.2 Dom NFCs, over 1 year and up to 5 years | 50,00 | 50,00 | 100,00 % | 50,00 | 50,00 | 100,00 % | 50,00 | 50,00 | 100,00 % |
| 4.3 Dom NFCs, over 5 years | 250,00 | 262,00 | 95,42 % | 250,00 | 262,00 | 95,42 % | 0,00 | 262,00 | 0,00 % |
| 5. OEA MFIs | | | | | | | | | |
| 6. OEA General government | 0,00 | 0,05 | 100,00 % | 0,00 | 0,05 | 100,00 % | 0,00 | 0,05 | 100,00 % |
| 8.1 OEA NFCs, up to 1 year | 0,00 | 0,05 | 100,00 % | 0,00 | 0,05 | 100,00 % | 0,00 | 0,05 | 100,00 % |
| 8.2 OEA NFCs, over 1 year and up to 5 years | 7,50 | 9,00 | 83,33 % | 7,50 | 6,00 | 125,00 % | 7,50 | 6,00 | 125,00 % |
| 8.3 OEA NFCs, over 5 years | | | | | | | | | |
| 9. EA OFIs and non-MMF investment funds | | | | | | | | | |
| 10. EA ICPFs | | | | | | | | | |
| Total EA Loans | 987,50 | 1 001,10 | 98,64 % | 987,50 | 998,10 | 98,94 % | 137,50 | 998,10 | 13,78 % |
| 12. RoW - Total Loans | 20,00 | 20,00 | 100,00 % | 20,00 | 20,00 | 100,00 % | 20,00 | 20,00 | 100,00 % |

4.2.2 Example of list of excluded instruments in iBSI calculation

Left-hand side of table:

| | OBSRVD_AGNT_CD | DT_RFRNC | T1M_MSG_ID | T2M_MSG_ID | T2Q_MSG_ID | REF_MSG_ID | CNTRCT_ID | INSTRMNT_ID | IS_NOT_FDCRY | RGNNTN_FLG | INTR_CMPNV_FLG | NON_TRDTNLLY_SEC_FLG | STTLD_FLG | IS_IBSI_INSTRMNT | IS_ACNTNG_RPTD | IS_PRTLY_TRNSFRD | IS_JNT_LBLTY_RPTD_ALL | IS_JNT_LBLTY_CMPLT | IS_DBTR_NOT_THE_OA | IS_INSTTTLN_SCTR_RPTD | IS_DBTR_CTRY_RPTD | IS_DT_STTLD |
|----------|----------------|----------|------------|------------|------------|------------|--------------|-------------|--------------|------------|----------------|----------------------|-----------|------------------|----------------|------------------|-----------------------|--------------------|--------------------|-----------------------|-------------------|-------------|
| LUB00XXX | 202003 | XX1 | XX1 | XX1 | XX1 | Contract8 | Instrument8 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| LUB00XXX | 202003 | XX1 | XX1 | XX1 | XX1 | Contract10 | Instrument10 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| LUB00XXX | 202003 | XX1 | XX1 | XX1 | XX1 | Contract7 | Instrument7 | -1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | -1 | 1 |
| LUB00XXX | 202003 | XX1 | XX1 | XX1 | XX1 | Contract9 | Instrument9 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| LUB00XXX | 202006 | XX2 | XX2 | XX2 | XX2 | Contract8 | Instrument8 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| LUB00XXX | 202006 | XX2 | XX2 | XX2 | XX2 | Contract10 | Instrument10 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| LUB00XXX | 202006 | XX2 | XX2 | XX2 | XX2 | Contract7 | Instrument7 | -1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | -1 | 1 |
| LUB00XXX | 202006 | XX2 | XX2 | XX2 | XX2 | Contract9 | Instrument9 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| LUB00XXX | 202009 | XX3 | XX3 | XX3 | XX3 | Contract8 | Instrument8 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| LUB00XXX | 202009 | XX3 | XX3 | XX3 | XX3 | Contract10 | Instrument10 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| LUB00XXX | 202009 | XX3 | XX3 | XX3 | XX3 | Contract7 | Instrument7 | -1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | -1 | 1 |
| LUB00XXX | 202009 | XX3 | XX3 | XX3 | XX3 | Contract9 | Instrument9 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |

Right-hand side of table:

| | SEC_FLG | IBSI_INSTRMNT | IS_ACCNTNG_RPTD | IS_PRTLY_TRNSFRD | IS_JNT_LBLTY_RPTD_ALL | IS_JNT_LBLTY_CMPLT | IS_JNT_LBLTY_CN_ONA | IS_DBTR_NOT_THE_OA | IS_INSTTTNL_SCTR_RPTD | IS_DBTR_CNTRY_RPTD | IS_DT_STTMNT_RPTD | CY0010 | CY0011 | CY0020 | CY0030 | CY0060 | CS0010 | CS0040 | CS0050 | CS0060 | CS0080_TYP_ENTY_NTNL_ID | CS0080_NM_ENTY | CS0120 | CS0130 | CS0140 | CS0150 | RIO080 | RIO060 | DQ_FLG | BCL_TO_CHECK_IBSI |
|---|---------|---------------|-----------------|------------------|-----------------------|--------------------|---------------------|--------------------|-----------------------|--------------------|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------------------------|----------------|--------|--------|--------|--------|--------|--------|--------|-------------------|
| 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | -1 | -1 | | |
| 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | -1 | 1 | | |
| 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | -1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | -1 | 1 | | |
| 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | -1 | 1 | | |
| 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | -1 | 1 | | |
| 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | -1 | 1 | | |
| 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | -1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | -1 | 1 | | |
| 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |
| 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | -1 | 1 | | |
| 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | -1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | -1 | 1 | | |
| 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | |

4.2.3 Example of list of included instruments in iBSI calculation

| OBSRVD_AGNT_CD | DT_RFRNC | T1M_MSG_ID | T2M_MSG_ID | T2Q_MSG_ID | REF_MSG_ID | CNTRCT_ID | INSTRMNNT_ID | MTRTY | ITEM |
|----------------|----------|------------|------------|------------|------------|------------|--------------|--------------------------------|---|
| LUB00XXX | 202003 | XX1 | XX1 | XX1 | XX1 | Contract5 | Instrument 5 | Up to 1 year | 1. Dom MFIs |
| LUB00XXX | 202003 | XX1 | XX1 | XX1 | XX1 | Contract1 | Instrument 1 | Above 5 years | 1. Dom MFIs & 1.1 Dom central banks |
| LUB00XXX | 202003 | XX1 | XX1 | XX1 | XX1 | Contract3 | Instrument 3 | Above 1 year and up to 5 years | 4.2 Dom NFCs, over 1 year and up to 5 years |
| LUB00XXX | 202003 | XX1 | XX1 | XX1 | XX1 | Contract11 | Instrument11 | Above 5 years | 4.3 Dom NFCs, over 5 years |
| LUB00XXX | 202003 | XX1 | XX1 | XX1 | XX1 | Contract2 | Instrument 2 | Above 5 years | 5. OEA MFIs |
| LUB00XXX | 202003 | XX1 | XX1 | XX1 | XX1 | Contract4 | Instrument 4 | Above 1 year and up to 5 years | 8.2 OEA NFCs, over 1 year and up to 5 years |
| LUB00XXX | 202003 | XX1 | XX1 | XX1 | XX1 | Contract6 | Instrument 6 | Up to 1 year | 12. RoW - Total Loans |
| LUB00XXX | 202006 | XX2 | XX2 | XX2 | XX2 | Contract5 | Instrument 5 | Up to 1 year | 1. Dom MFIs |
| LUB00XXX | 202006 | XX2 | XX2 | XX2 | XX2 | Contract1 | Instrument 1 | Above 5 years | 1. Dom MFIs & 1.1 Dom central banks |
| LUB00XXX | 202006 | XX2 | XX2 | XX2 | XX2 | Contract3 | Instrument 3 | Above 1 year and up to 5 years | 4.2 Dom NFCs, over 1 year and up to 5 years |
| LUB00XXX | 202006 | XX2 | XX2 | XX2 | XX2 | Contract11 | Instrument11 | Above 5 years | 4.3 Dom NFCs, over 5 years |
| LUB00XXX | 202006 | XX2 | XX2 | XX2 | XX2 | Contract2 | Instrument 2 | Above 5 years | 5. OEA MFIs |
| LUB00XXX | 202006 | XX2 | XX2 | XX2 | XX2 | Contract4 | Instrument 4 | Above 1 year and up to 5 years | 8.2 OEA NFCs, over 1 year and up to 5 years |
| LUB00XXX | 202006 | XX2 | XX2 | XX2 | XX2 | Contract6 | Instrument 6 | Up to 1 year | 12. RoW - Total Loans |
| LUB00XXX | 202009 | XX3 | XX3 | XX3 | XX3 | Contract5 | Instrument 5 | Up to 1 year | 1. Dom MFIs |
| LUB00XXX | 202009 | XX3 | XX3 | XX3 | XX3 | Contract3 | Instrument 3 | Above 1 year and up to 5 years | 4.2 Dom NFCs, over 1 year and up to 5 years |
| LUB00XXX | 202009 | XX3 | XX3 | XX3 | XX3 | Contract2 | Instrument 2 | Above 5 years | 5. OEA MFIs |
| LUB00XXX | 202009 | XX3 | XX3 | XX3 | XX3 | Contract4 | Instrument 4 | Above 1 year and up to 5 years | 8.2 OEA NFCs, over 1 year and up to 5 years |
| LUB00XXX | 202009 | XX3 | XX3 | XX3 | XX3 | Contract6 | Instrument 6 | Up to 1 year | 12. RoW - Total Loans |

4.3 Calculation of the iBSI aggregable balance

The iBSI aggregable balance (BSI_AGGRGBL_BLNC) is calculated as follows:

```
BSI_AGGRGBL_BLNC = PR_RT_DBTR_SHR * BSI_INSTRMNT_BLNC
```

The pro-rata debtor share (PR_RT_DBTR_SHR) is calculated as follows:

```

IF NMBR_DBTRS = 1 THEN DO;
    IF JNT_LBLTY_AMNT is NULL THEN PR_RT_DBTR_SHR = 1;
    ELSE IF JNT_LBLTY_AMNT = 0 AND OTSTNDNG_NMNL_AMNT = 0
        THEN PR_RT_DBTR_SHR = 1/2;
    ELSE PR_RT_DBTR_SHR = JNT_LBLTY_AMNT / OTSTNDNG_NMNL_AMNT;
END;
ELSE IF NMBR_DBTRS > 1 THEN DO;
    IF JNT_LBLTY_AMNT is NULL THEN PR_RT_DBTR_SHR is NULL;
    ELSE IF JNT_LBLTY_AMNT_Sum = 0 AND OTSTNDNG_NMNL_AMNT = 0
        THEN PR_RT_DBTR_SHR = 1/NMBR_DBTRS;
    ELSE IF JNT_LBLTY_AMNT_Sum = 0 AND OTSTNDNG_NMNL_AMNT > 0
        THEN PR_RT_DBTR_SHR = 0;
    ELSE IF JNT_LBLTY_AMNT_Sum > OTSTNDNG_NMNL_AMNT
        THEN PR_RT_DBTR_SHR = JNT_LBLTY_AMNT / JNT_LBLTY_AMNT_Sum;
    ELSE IF JNT_LBLTY_AMNT_Sum <= OTSTNDNG_NMNL_AMNT
        THEN PR_RT_DBTR_SHR = JNT_LBLTY_AMNT / OTSTNDNG_NMNL_AMNT;
END;

```

Where:

- NMBR_DBTRS = number of debtors in the instrument
- JNT_LBLTY_AMNT_Sum = sum of the joint liabilities in an instrument

The iBSI instrument balance (BSI_INSTRMNT_BLNC) is calculated as follows:

$$\text{BSI_INSTRMNT_BLNC} = \text{Max}(\text{OTSTNDNG_NMNL_AMNT} - (\text{IS_PRTLY_TRNSFRD} * \text{TRNSFRRD_AMNT}), 0);$$