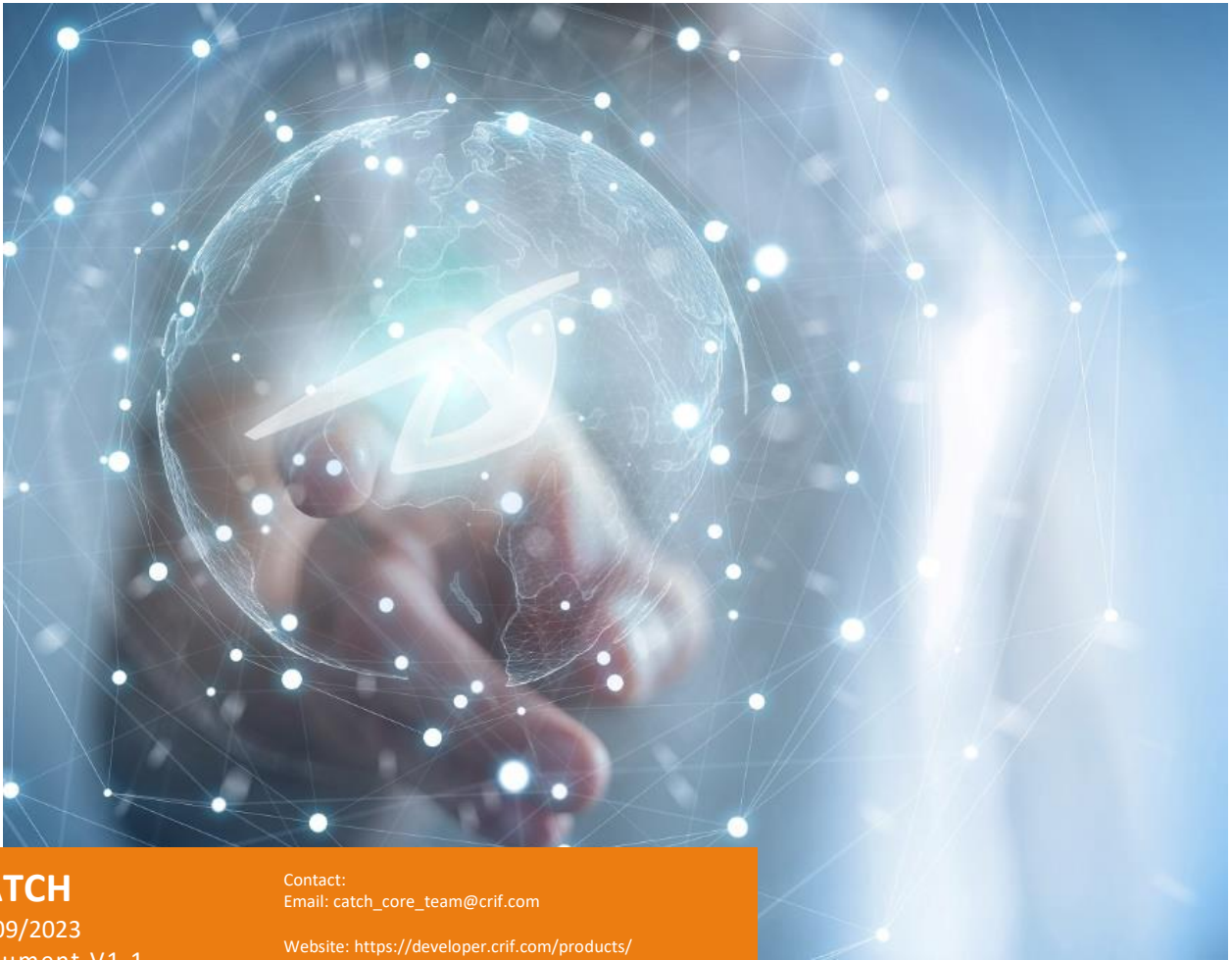


# CATCH ANALYTICS



**CATCH**

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Contact:  
Email: [catch\\_core\\_team@crif.com](mailto:catch_core_team@crif.com)

Website: <https://developer.crif.com/products/catch/>

## AUGMENTED ANALYTICS

CRIF has developed an analytics suite calculating structured insights from Open Banking unstructured data. Details and information coming from the accounts connected can be used for a synthetic evaluation of the applicant (retail or corporate), provided by NEOS analytics packages.

### Packages Suite

|                       |                                                                                     |                                                                                                               |                                                                                           |                                                                                           |
|-----------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| <b>Base</b>           |    | Period definitions, date ranges, warnings, connections and accounts indicators, significance of accounts.     |  B2C   |  B2B   |
| <b>Identity</b>       |    | Open banking subject's identity verification. Data Check between applicant info and account ownership.        |  B2C   |                                                                                           |
| <b>Credit Score</b>   |    | Creditworthiness score based on access to account information                                                 |  B2C   |  B2B   |
| <b>Risk</b>           |  | Open banking risk indicators, negative behavior or habits associated to the applicant.                        |  B2C |  B2B |
| <b>Cash Flow</b>      |  | Period analysis of income and expenses, with specific insights and categorization added value.                |  B2C |  B2B |
| <b>Marketing</b>      |  | Lifestyle indicators to evaluate subject's spending behavior and give possible insights for marketing actions |  B2C |                                                                                           |
| <b>XS2A Statement</b> |  | Open banking adapted view of the cash flow statement for SMEs and Companies                                   |                                                                                           |  B2B |



CATCH Analytics packages exploits the power of CRIF proprietary ML algorithm of categorization engine. When present, this symbol indicates that a category is considered for the calculation.

## Base



Technical set of KPIs, period definitions, date ranges, warnings, connections and accounts details.



B2C



B2B

## Subject

| KPI                      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| subjectId                | Subject unique identifier.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| dataPeriod               | <div> <div>startDate</div> <div>It is the oldest day of the transactions contained in the account(s). In other words, it's the date when the period connected starts.</div> </div> <div> <div>endDate</div> <div>It is the newest day of the transactions contained in the account(s). In other words, it's the date when the period connected ends.</div> </div> <div> <div>daysCount</div> <div>Count of the days of the period.</div> </div> <div> <div>fullMonthsCount</div> <div>Count of the full months of the period. Only complete months in terms of days (from first to last day) are counted.</div> </div>                                                    |
| countriesCount           | Count of countries related to the connected provider account(s).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| providersCount           | Count of provider(s) connected.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| accountsCount            | Count of account(s) connected.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| significantAccountsCount | Count (how many) of accounts with a significanceIndex=5.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| balance                  | <div> <div>totalBalanceAmount</div> <div>Sum of totalBalanceAmount of all accounts connected.</div> </div> <div> <div>averageBalanceAmount</div> <div>Sum of averageBalanceAmount of all accounts connected.</div> </div> <div> <div>medianBalanceAmount</div> <div>Sum of medianBalanceAmount of all accounts connected.</div> </div> <div> <div>minimumBalanceAmount</div> <div>Lowest (minimum) balance amount calculated during the whole period considering all connected account(s).</div> </div> <div> <div>maximumBalanceAmount</div> <div>Highest (maximum) balance amount calculated during the whole period considering all connected account(s).</div> </div> |
| periodTransactionsCount  | <div> <div>total</div> <div>Count of transactions of all connected account(s) in the whole period.</div> </div> <div> <div>income</div> <div>Count of incoming transactions of all connected account(s) in the whole period.</div> </div> <div> <div>expenses</div> <div>Count of expenses transactions of all connected account(s) in the whole period.</div> </div>                                                                                                                                                                                                                                                                                                     |
| monthlyTransactionsCount | <div> <div>total</div> <div>Count of transactions of all connected account(s) per each month.</div> </div> <div> <div>income</div> <div>Count of incoming transactions of all connected account(s) per each month.</div> </div> <div> <div>expenses</div> <div>Count of expenses transactions of all connected account(s) per each month.</div> </div>                                                                                                                                                                                                                                                                                                                    |

## Connections

These indicators and KPIs are repeated for each connection of the subject. This element can contain more than one entry.

| KPI                             | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>connectionId</b>             | Connection unique identifier.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>dataPeriod</b>               | <div> <div> <div>startDate</div> <div>endDate</div> <div>daysCount</div> <div>fullMonthsCount</div> </div> <div> <div>The date of the first transaction of this connection, considering all its accounts.</div> <div>The date of the latest transaction of this connection, considering all its accounts.</div> <div>Count of the days of the period.</div> <div>Count of the full months of the period. Only complete months in terms of days (from first to last day) are counted.</div> </div> </div>                                                                                                                                                                              |
| <b>accountsCount</b>            | Count of account(s) connected.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>significantAccountsCount</b> | Count (how many) of accounts with a significanceIndex=5.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>balance</b>                  | <div> <div> <div>totalBalanceAmount</div> <div>averageBalanceAmount</div> <div>medianBalanceAmount</div> <div>minimumBalanceAmount</div> <div>maximumBalanceAmount</div> </div> <div> <div>Sum of totalBalanceAmount of all accounts connected.</div> <div>Sum of averageBalanceAmount of all accounts connected.</div> <div>Sum of medianBalanceAmount of all accounts connected.</div> <div>Lowest (minimum) balance amount calculated during the whole period considering all the account of the related connectionId.</div> <div>Highest (maximum) balance amount calculated during the whole period considering all the account of the related connectionId.</div> </div> </div> |
| <b>periodTransactionsCount</b>  | <div> <div> <div>total</div> <div>income</div> <div>expenses</div> </div> <div> <div>Count of transactions of all connected account(s) in the whole period.</div> <div>Count of incoming transactions of all connected account(s) in the whole period.</div> <div>Count of expenses transactions of all connected account(s) in the whole period.</div> </div> </div>                                                                                                                                                                                                                                                                                                                 |
| <b>monthlyTransactionsCount</b> | <div> <div> <div>total</div> <div>income</div> <div>expenses</div> </div> <div> <div>Monthly average count of transactions of all connected account(s) per each month.</div> <div>Monthly average count of incoming transactions of all connected account(s) per each month.</div> <div>Monthly average count of expenses transactions of all connected account(s) per each month.</div> </div> </div>                                                                                                                                                                                                                                                                                |

## Accounts

These indicators and KPIs are repeated for each account of the connections. This element can contain more than one entry.

| KPI | Description |
|-----|-------------|
|-----|-------------|

|                              |                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>accountId</b>             |                                                                                                                       | Account unique identifier.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>warnings</b>              | withoutTransactions                                                                                                   | Indicates that the account does not have any transaction in the data downloaded from the provider.                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>dataPeriod</b>            | startDate<br>endDate<br>daysCount<br>fullMonthsCount                                                                  | The date of the first transaction of this account.<br>The date of the latest transaction of this account.<br>Count of the days of the period.<br>Number of months between the startReferenceDate and endReferenceDate excluding the first month and the last month.                                                                                                                                                                                                                                                                             |
| <b>significanceIndex</b>     |                                                                                                                       | Index that classifies current accounts on a scale from 0 (not calculable due to insufficient historical depth) to 5 (high significance) according to the level of informative significance of the accounts. For further details see the paragraph <b>Significance index</b> in the <i>Annex</i> section of this document.                                                                                                                                                                                                                       |
| <b>newestTransactionDays</b> |                                                                                                                       | Count of days since newest transaction. The result is an integer number, in days.                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>oldestTransactionDays</b> |                                                                                                                       | Count of days since oldest transaction. The result is an integer number, in days.                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>overdraft</b>             | balanceBelowZeroDays<br>averageBalanceBelowZeroAmount<br>longestIntervalBelowZeroDays<br>daysBelowZeroOverPeriodRatio | Amount of money that a subject within a bank account owes to the bank.<br>This KPI does not take into consideration credit line, if any. It gives insights about balance below zero in terms of days count, amount and interval.<br>Count of days with balance amount below zero.<br>Average of balance amount for the days with amount below zero.<br>Longest interval of time (days count) with balance amount below zero.<br>Ratio between days with balance amount below zero and the count of days of the entire period of this account.   |
| <b>balance</b>               | totalBalanceAmount<br>averageBalanceAmount<br>medianBalanceAmount<br>minimumBalanceAmount<br>maximumBalanceAmount     | Total booked balance amount calculated at the endReferenceDate.<br>Average of balance amount calculated at the endReferenceDate, on daily basis, considering the whole period.<br>Median of balance amount calculated at the endReferenceDate, on daily basis, considering the whole period.<br>Lowest (minimum) balance amount calculated during the whole period considering the related accountId, on daily basis.<br>Highest (maximum) balance amount calculated during the whole period considering the related accountId, on daily basis. |

|                                 |          |                                                                                         |
|---------------------------------|----------|-----------------------------------------------------------------------------------------|
| <b>periodTransactionsCount</b>  |          |                                                                                         |
|                                 | total    | Count of transactions of the connected account in the whole period.                     |
|                                 | income   | Count of incoming transactions of the connected account in the whole period.            |
|                                 | expenses | Count of expenses transactions of the connected account in the whole period.            |
| <b>monthlyTransactionsCount</b> |          |                                                                                         |
|                                 | total    | Monthly average count of transactions of the connected account per each month.          |
|                                 | income   | Monthly average count of incoming transactions of the connected account per each month. |
|                                 | expenses | Monthly average count of expenses transactions of the connected account per each month  |

## Identity



Open banking subject's identity verification. Data Check between applicant info and account ownership.



### KPI

soleTrader



### Description

Consumer: account connected possibly belongs to an individual company (sole trader, freelancer, etc...) if occurring at least 3 transactions with a relevant amount of: IN\_14, LO\_02, OO\_02, OO\_07, OO\_08, OO\_12, OO\_14, RE\_01, RE\_12, RE\_13, RE\_14, RE\_22, in the whole period. Relevant transactions considered are not less than 100€ or equivalent amount in requested currency. It is a flag that, if "true", indicates that the account owner has "high possibility" to be a sole trader.

Business: not calculated.

## Credit Score



Creditworthiness score based on access to account information



B2C



B2B

| KPI                | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| score              | It is an integer number which expresses a measure of the subject predictive credit risk, by aggregating the information contained in the accounts available. The lower the score the higher the credit risk. The score assumes values between 321 and 694. Only the account with the highest significance index is considered. If there are more than one with the same significanceIndex, then the one with lowest score is selected.<br>For further details see Annex section of this document. |
| tranche            | Tranche of risk associated to the score. For further details see Score classes paragraph in Annex section of this document.                                                                                                                                                                                                                                                                                                                                                                       |
| area               | Both consumer and business segments can be aggregated into 3 risk areas depending on the tranche.<br>For further details see Score areas paragraph in Annex section of this document.                                                                                                                                                                                                                                                                                                             |
| factors            | Score factors are data with synthetic description which influenced the assessment of the credit score. The most relevant factors (always three) will be displayed when the score is calculated.                                                                                                                                                                                                                                                                                                   |
| defaultProbability | It is the one-year probability of default (PD) reflecting the subject ability to pay back its obligations.                                                                                                                                                                                                                                                                                                                                                                                        |



## Risk









Open banking risk indicators, negative behavior or habits associated to the applicant.



Each KPI, unless otherwise specified, returns the following 4 indicators:











- **periodTotalTransactionsAmount:** sum of all the transactions amount in the whole period
- **periodTotalTransactionsCount:** count of the number of transactions in the whole period
- **monthlyAverageTransactionsAmount:** monthly average amount of all the transactions in the whole period
- **monthlyAverageTransactionsCount:** monthly average count (expressed in number) of all the transactions in the whole period

Where specified in KPI column, in addition to the four indicators described above also some further indicators could be returned.

| KPI                           |                                                                                     | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>alimonyPayment</b>         |    | <p>Consumer: analysis of transactions recognized by categorization engine with category FA_07.</p> <p>Business: not calculated.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>bailiff</b>                |    | <p>Consumer: analysis of transactions recognized by categorization engine with category OO_14.</p> <p>Business: not calculated.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>penalties</b>              |    | <p>Consumer: not calculated.</p> <p>Business: analysis of transactions recognized by categorization engine with category FO_05 and FO_09.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>consumerRelated</b>        |    | <p>Consumer: not calculated.</p> <p>Business: analysis of transactions recognized by categorization engine with category CR_*.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>collectionNotification</b> |  | <p>Consumer: income transactions categorized as RE_26 related to collection agency, usually it's a very low amount, to notify the subject and remind that there is an open payment.</p> <p>Business: same as consumer but considering transactions categorized as RE_19.</p> <p>For this KPI only the following indicators are calculated:</p> <ul style="list-style-type: none"> <li>▪ periodTotalTransactionsCount</li> <li>▪ monthlyAverageTransactionsCount</li> </ul>                                                                                                                                                                                                                                        |
| <b>garnishment</b>            |  | <p>Consumer: income transaction categorized as RE_24 related to garnishment rembursement due to the presence of a P-account. A P-account is a legal protection against garnishments which can be applied to any account type, and in case of an active garnishment there's normally a monthly allowance amount (this amount can be different for each bank and country). This kpi might not be available in every country.</p> <p>Business: same as consumer but considering transactions categorized as RE_18.</p> <p>For this KPI only the following indicators are calculated:</p> <ul style="list-style-type: none"> <li>▪ periodTotalTransactionsCount</li> <li>▪ monthlyAverageTransactionsCount</li> </ul> |



## Indebtedness

List of indebtedness related transactions and kpis.

| KPI                       |                                                                                     | Description                                                                                                                                                                                                              |
|---------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>cardInstalment</b>     |    | Consumer: analysis of transactions recognized by categorization engine with category LO_01<br><br>Business: not calculated                                                                                               |
| <b>leasing</b>            |    | Consumer: analysis of transactions recognized by categorization engine with category LO_02<br><br>Business: same as consumer but considering transactions categorized as LE_02                                           |
| <b>loanInstalment</b>     |    | Consumer: analysis of transactions recognized by categorization engine with category LO_03<br><br>Business: same as consumer but considering transactions categorized as LE_03                                           |
| <b>mortgageInstalment</b> |    | Consumer: analysis of transactions recognized by categorization engine with category LO_04<br><br>Business: same as consumer but considering transactions categorized as LE_04                                           |
| <b>interest</b>           |    | Consumer: analysis of transactions recognized by categorization engine with category LO_07<br><br>Business: not calculated                                                                                               |
| <b>debtCollection</b>     |  | Consumer: analysis of transactions recognized by categorization engine with category LO_08<br><br>Business: same as consumer but considering transactions categorized as LE_13                                           |
| <b>overdraft</b>          |  | Consumer: not calculated<br><br>Business: analysis of transactions recognized by categorization engine with category LE_10                                                                                               |
| <b>equity</b>             |  | Consumer: not calculated<br><br>Business: analysis of transactions recognized by categorization engine with category LE_12                                                                                               |
| <b>total</b>              |  | Consumer: analysis of transactions recognized by categorization engine with categories present in this indebtedness section.<br><br>Business: same as consumer                                                           |
| <b>incomeRatio</b>        |  | Consumer: subject indebtedness index expressed as ratio between monthly expenses for loans LO_* and monthly income<br><br>Business: same as consumer but considering transactions categorized as LE_* and monthly income |


## Cash

List of cash related transactions and kpis.

| KPI               |                                                                                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>deposit</b>    |  | <p>Consumer: analysis of transactions recognized by categorization engine with category RE_15</p> <p>Business: same as consumer but considering transactions categorized as RE_07</p> <p>Ratio between total amount of cash deposit and total amount of income in the whole period.</p> <p>This KPI expresses whether these transactions are regular (considering only full months in the period). Float is an interval [0,1], where 1 represents perfect regularity (which means there's a cash deposit transaction every month). It is the ratio between total months with at least one deposit transaction and the count of full months.</p>                                                                                                      |
|                   | <div>incomeRatio</div> <div>regularity</div>                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>withdrawal</b> |  | <p>Consumer: analysis of transactions recognized by categorization engine with category OO_01</p> <p>Business: same as consumer but considering transactions categorized as FO_07</p> <p>Ratio between total amount of cash withdrawals and total amount of expenses in the period</p> <p>Ratio between total amount of cash withdrawals and total amount of income in the period.</p> <p>This KPI expresses whether these transactions are regular (considering only full months in the period). Float is an interval [0,1], where 1 represents perfect regularity (which means there's a cash withdrawal transaction every month). It is the ratio between total months with at least one withdrawal transaction and the count of full months.</p> |
|                   | <div>expensesRatio</div> <div>incomeRatio</div> <div>regularity</div>             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

## Gambling and games

List of gambling and online games related transactions and kpis.

| KPI             |                                                                                     | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>gambling</b> |  | <p>Consumer: analysis of the negative transactions recognized by categorization engine with category HF_03</p> <p>Business: not calculated</p> <p>Ratio between total amount of cash gambling expenses and total amount of expenses in the period.</p> <p>Ratio between total amount of gambling income transactions and total amount of income in the period.</p> <p>Average weighted regularity of gambling expenses of the whole period connected. It's calculated as ratio between all the months with at least 1 gambling expense and the total number of months. Float is an interval [0,1], where 1 represents perfect regularity (which means there's a transaction every month).</p> |
|                 | <div>expensesRatio</div> <div>incomeRatio</div> <div>regularity</div>               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

## onlineGames



expensesRatio

incomeRatio

regularity

Consumer: analysis of the negative transactions recognized by categorization engine with category HF\_10

Business: not calculated

Ratio between total amount of online games expenses and total amount of expenses in the period.

Ratio between total amount of online games income transactions and total amount of income in the period.

Average weighted regularity of online games expenses of the whole period connected. It's calculated as ratio between all the months with at least 1 online games expense and the total number of months. Float is an interval [0,1], where 1 represents perfect regularity (which means there's an transaction every month).

## Unsuccessful Direct Debit

List of unsuccessful direct debits related transactions (e.g. when the account balance is not enough for the direct debit to be debited).

### KPI

#### chargeBack



### Description

Consumer: income transaction categorized as RE\_23 credited back (chargeback) after the direct debit couldn't take place due to low balance.

Business: same as consumer but considering transactions categorized as RE\_17

#### fee



Consumer: expenses transaction categorized as OO\_15 (fee) debited due to the fact that a direct debit couldn't take place, due to low balance.

Business: same as consumer but considering transactions categorized as OE\_06

For this KPI only the following indicators are calculated:

- periodTotalTransactionsCount
- monthlyAverageTransactionsCount

## Cash Flow



Period analysis of income and expenses, with specific insights and categorization added value.



B2C



B2B

### Period analysis

Cashflow analysis of income and expenses of the whole period connected.

| KPI                                  | Description                                                                                                                                                    |                                                                                                   |
|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| <b>incomeAmount</b>                  | total                                                                                                                                                          | Total income amount in the whole period.                                                          |
|                                      | average                                                                                                                                                        | Average income amount in the whole period.                                                        |
|                                      | median                                                                                                                                                         | Median income amount in the whole period.                                                         |
| <b>expensesAmount</b>                | total                                                                                                                                                          | Total expenses amount in the whole period.                                                        |
|                                      | average                                                                                                                                                        | Average expenses amount in the whole period.                                                      |
|                                      | median                                                                                                                                                         | Median expenses amount in the whole period.                                                       |
| <b>savingAmount</b>                  | total                                                                                                                                                          | Disposable amount calculated as sum of total income and total expenses of the period in analysis. |
|                                      | average                                                                                                                                                        | Average saving amount in the whole period.                                                        |
|                                      | median                                                                                                                                                         | Median saving amount in the whole period.                                                         |
| <b>savingRatio</b>                   | Ratio between savingAmount and total income of the whole period in analysis. This kpi represents how much (in %) the subject is saving compared to the income. |                                                                                                   |
| <b>incomeExpensesRatio</b>           | Ratio between total income and total expenses of the whole period in analysis.                                                                                 |                                                                                                   |
| <b>monthsWithNegativeSavingCount</b> | Count of months (number) with a negative savingAmount.                                                                                                         |                                                                                                   |

## Insights

List of added value insights related to cashflow transactions with the aim to give a better comprehension of the subject's accounts. Insight section is relevant both for consumer and business but some insights, where specified, are calculated for one purpose only.

| KPI                                                                                                                                                                                                                                                                                         | Description                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>bestAccountDirectDebit</b>                                                                                                                                                                                                                                                               | <p>Consumer: suggested best account for a direct debit, with specification of the day of the month, and the maximum amount applicable as direct debit. Since the current month could be incomplete it is excluded from the calculation rule, only full months are considered in the calculation.</p> <p>Business: same as consumer.</p>                                                             |
| <div> <div>accountId</div> <div>day</div> <div>amount</div> </div>                                                                                                                                                                                                                          | <p>Account unique identifier.</p> <p>Day of the month identified as the best day for direct debit.</p> <p>Maximum amount applicable as direct debit for the day identified.</p>                                                                                                                                                                                                                     |
| <b>savingRunwayMonths</b>                                                                                                                                                                                                                                                                   | <p>Consumer: number of months until the subject runs out of money according to the current expenses trend. This kpi is calculated only in case the subject has a positive current balance and a negative saving amount.</p> <p>Business: same as consumer.</p>                                                                                                                                      |
| <b>expensesRunwayMonths</b>                                                                                                                                                                                                                                                                 | <p>Number of months which the subject can cover the average expenses with the current balance. This kpi is not calculated only if subject has no expenses at all.</p> <p>Business: same as consumer.</p>                                                                                                                                                                                            |
| <b>currentMonth</b>                                                                                                                                                                                                                                                                         | <p>Current month is the month of the input endReferenceDate. The default date is today that is the day in which NEOS Analytics method is called. Current month might have incomplete data.</p> <p>The current month analysed.</p>                                                                                                                                                                   |
| <div> <div>income</div> <div> <div>expectedAmount</div> <div>actualAmount</div> </div> </div> <div> <div>expenses</div> <div> <div>expectedAmount</div> <div>actualAmount</div> </div> </div> <div> <div>saving</div> <div> <div>expectedAmount</div> <div>actualAmount</div> </div> </div> | <p>Average income amount expected in the current month.</p> <p>Total income amount at the date of the input reference date.</p> <p>Average expenses amount expected in the current month.</p> <p>Total expenses amount at the date of the input reference date.</p> <p>Average saving amount expected in the current month.</p> <p>Total saving amount at the date of the input reference date.</p> |
| <b>decadeHigherExpenses</b>                                                                                                                                                                                                                                                                 | <p>Consumer: not calculated.</p> <p>Business: decade (1st, 2nd, 3rd) of the month in which the highest outflow recurs. The output is a number that indicates the decade, between 1 and 3. Since the current month could be incomplete it is excluded from the calculation rule, only full months are considered in the calculation.</p>                                                             |

## forecast



month  
incomeExpectedAmount  
expensesExpectedAmount  
savingExpectedAmount

The forecast is the cashflow scenarios provision of inflow, outflow and savings in the future 3 months. This element contains three entry for each forecasted month.

Month analysed.

Income amount expected in the forecasted month.

Expenses amount expected in the forecasted month.

Saving amount expected in the forecasted month.

## monthlyAffordableAmount



This indicator can be used to support the subject affordability assessment.

It calculates the predicted net monthly average amount considering the available liquidity, relevant revenues, cashflow and financial commitments.

A financial commitment is an agreement to meet certain expenses in the future. It can include rent, utilities, insurance, loan repayments.

This kpi is calculated only if the subject has at least a significant account.

## Marketing



















Lifestyle indicators to evaluate subject's spending behavior and give possible insights for marketing actions.










Each KPI, except for “flags” fields, returns the following indicators:

- **monthlyAverageTransactionsAmount**: monthly average amount of all the transactions in the whole period
- **monthlyAverageTransactionsCount**: monthly average count (expressed in number) of all the transactions in the whole period

| KPI        |                                                                                                                                                             | Description                                                                                                                                                                                                                                                                                                                                                                                            |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| child      |  <div> <div>income</div> <div>expenses</div> </div>                        | Indicators to intercept whether the subject evaluated has transactions related to children.                                                                                                                                                                                                                                                                                                            |
| car        |                                                                            | Indicators to intercept whether the subject evaluated has transactions related to cars.                                                                                                                                                                                                                                                                                                                |
| house      |  <div> <div>houseLiving</div> <div>tenant</div> <div>landlord</div> </div> | <p>Indicators to intercept whether the subject evaluated has transactions related to house (considering also bills, subscriptions, building renovations, furnishings and home accessories, house insurance, house purchasing).</p> <p>The tenant is a person who occupies land or property rented from a landlord.</p> <p>The landlord is a person who rents out land, building, or accommodation.</p> |
| pet        |                                                                            | Indicator to intercept whether the subject evaluated has transactions related to pets.                                                                                                                                                                                                                                                                                                                 |
| creditCard |                                                                           | Indicator to intercept whether the subject evaluated has transactions related to credit cards.                                                                                                                                                                                                                                                                                                         |
| loan       |                                                                          | Indicator to intercept whether the subject evaluated has transactions related to loans.                                                                                                                                                                                                                                                                                                                |
| fashion    |                                                                          | Indicator to intercept whether the subject evaluated has transactions related to fashion, clothes, luxury goods, wellness, beauty and personal care.                                                                                                                                                                                                                                                   |
| sport      |                                                                          | Indicators to intercept whether the subject evaluated has transactions related to sports activities and sporting goods.                                                                                                                                                                                                                                                                                |
| traveling  |                                                                          | Indicators to intercept whether the subject evaluated has transactions related to traveling (flights, travel agency, holiday packages etc.).                                                                                                                                                                                                                                                           |
| gambling   |  <div> <div>income</div> <div>expenses</div> </div>                      | Indicators to intercept whether the subject evaluated has transactions related to gambling.                                                                                                                                                                                                                                                                                                            |
| culture    |                                                                          | Indicators to intercept whether the subject evaluated has transactions related to culture (books, museums etc.).                                                                                                                                                                                                                                                                                       |
| liquor     |                                                                          | Indicators to intercept whether the subject evaluated has transactions related to booze and liquor shops.                                                                                                                                                                                                                                                                                              |
| tobacco    |                                                                          | Indicators to intercept whether the subject evaluated has transactions related to cigarettes and tobacco shops.                                                                                                                                                                                                                                                                                        |
| digital    |                                                                          | Indicators to intercept whether the subject evaluated has transactions related to digital technologies (considering also music bills and online games, ecommerce and electronics),                                                                                                                                                                                                                     |
| telco      |                                                                          | Indicators to intercept whether the subject evaluated has transactions related to telcos.                                                                                                                                                                                                                                                                                                              |
| socialLife |                                                                          | Indicators to intercept whether the subject evaluated has transactions related to pubs, restaurants, bars, clubs etc...                                                                                                                                                                                                                                                                                |



|                               |                                                                                   |                      |                                                                                                            |
|-------------------------------|-----------------------------------------------------------------------------------|----------------------|------------------------------------------------------------------------------------------------------------|
| <b>health</b>                 |  |                      | Indicators to intercept whether the subject evaluated has transactions related to health.                  |
| <b>insuranceAndPrevention</b> |  |                      | Indicators to intercept whether the subject evaluated has transactions related to insurance.               |
| <b>investmentAndTrading</b>   |  | [ income<br>expenses | Indicators to intercept whether the subject evaluated has transactions related to investments and trading. |
| <b>tax</b>                    |  |                      | Indicators to intercept whether the subject evaluated has transactions related to taxes.                   |
| <b>flagSalary</b>             |  |                      | Flag to intercept whether the subject evaluated has salary or not.                                         |
| <b>flagPension</b>            |  |                      | Flag to intercept whether the subject evaluated receives a pension or not.                                 |
| <b>flagSocialWelfare</b>      |  |                      | Flag to intercept whether the subject evaluated receives social welfare programs.                          |




## XS2A Statement



Open banking adapted view of the cash flow statement for SMEs and Companies



Inflows and outflows are grouped in: operations, investing, financing and other, representing an open banking version of the cash flow statement filed by SMEs and Companies.

| KPI               |                                                                                     | Description                                                                                             |
|-------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| <b>operations</b> |    | Cash flows from (used in) operating activities.                                                         |
|                   | revenueFromSalesAmount                                                              | Total amount of transactions related to revenues from sales, direct sales to customers.                 |
|                   | otherRevenuesAmount                                                                 | Total amount of transactions related to other revenues.                                                 |
|                   | paymentsToSuppliersAmount                                                           | Total amount of transactions related to suppliers payments.                                             |
|                   | paymentsToEmployeesAmount                                                           | Total amount of transactions related to employees payments.                                             |
|                   | incomeTaxesAmount                                                                   | Total amount of transactions related to income taxes payments.                                          |
|                   | interestAndDividendsAmount                                                          | Total amount of transactions related to interests and dividends inflows.                                |
|                   | totalAmount                                                                         | Total amount of the operations section.                                                                 |
| <b>investing</b>  |   | Cash flows from (used in) investing activities.                                                         |
|                   | tangibleAssetsInAmount                                                              | Total amount of transactions related to tangible assets inflows.                                        |
|                   | tangibleAssetsOutAmount                                                             | Total amount of transactions related to tangible assets outflows.                                       |
|                   | intangibleAssetsInAmount                                                            | Total amount of transactions related to intangible assets inflows.                                      |
|                   | intangibleAssetsOutAmount                                                           | Total amount of transactions related to intangible assets outflows.                                     |
|                   | financialAssetsInAmount                                                             | Total amount of transactions related to financial assets inflows.                                       |
|                   | financialAssetsOutAmount                                                            | Total amount of transactions related to financial assets outflows.                                      |
|                   | totalAmount                                                                         | Total amount of the investing section.                                                                  |
| <b>financing</b>  |  | Cash flows from (used in) financing activities.                                                         |
|                   | borrowingsAmount                                                                    | Total amount of transactions related to borrowings inflows (incoming loans, mortgages, leasings etc..). |
|                   | paymentOfDebtsAmount                                                                | Total amount of transactions related to debts payments (outgoing loans, mortgages, leasings etc..).     |
|                   | issueOfShareCapitalAmount                                                           | Total amount of transactions related to equity and share capital inflows.                               |
|                   | paymentOfDividendsAmount                                                            | Total amount of transactions related to equity and share capital outflows and dividends payments.       |
|                   | totalAmount                                                                         | Total amount of the financing section.                                                                  |

|                       |                                                                                                            |                                                                                                                                                                                                             |
|-----------------------|------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>other</b>          | <div> inflowsAmount<br/> outflowsAmount </div>                                                             | <p>All the categories not used in other section.</p> <p>Total amount of inflows transactions not used in any other section.</p> <p>Total amount of outflows transactions not used in any other section.</p> |
| <b>initialBalance</b> | This the balance at the start date of the account(s) connected.                                            |                                                                                                                                                                                                             |
| <b>finalBalance</b>   | This the balance at the end date of the account(s) connected.                                              |                                                                                                                                                                                                             |
| <b>netAmount</b>      | It is the sum of the initialBalance and all the transactions amount, considering all account(s) connected. |                                                                                                                                                                                                             |

## Annex

### NEOS Score

The NEOS Score is a creditworthiness score based on current account information and on the categorization of the banking descriptions performed by CRIF proprietary algorithms.

The NEOS Score provides a three-digit score as output which expresses the probability that the subject will default. The lower the score, the higher the probability of default.

The probability of default (PD) reflects the subject ability to pay back its obligations during the following twelve months.

### Details of the development sample

The development sample is representative of the credit applications submitted by natural and legal persons in the market, and comprises around 100,000 subjects that have made available the movements from their payment accounts in the twelve months prior to the credit application: around 15 million transactions in total were analyzed.

The development sample for the NEOS Score's **consumer** segment is made up of payment account transactions referring to natural persons and sole traders, accounting for 75% of the analytical sample, represented as follows:



The development sample for the NEOS Score's **business** segment is representative of all the bank payment account information referring to subjects classified as companies, which account for 25% of the analytical sample.

Both the NEOS Score's **consumer** and **business** sample have a minimum observation period of 90 days of account transactions. In both cases, a predictive risk estimate is made for the 12 months after the application date.

### Performance Definition

In the development phase, predictive risk estimation was calculated considering the target event estimated by the Perform 2.0 Advanced Credit Bureau Score, according to which, a counterparty is defined as "bad" if the following are identified at least one of the credit lines in the portfolio:

- Negative notifications
- For installment-type credit lines: 3 overdue or unpaid installments
- For non-installment type credit lines: exceeded limit of more than 10% for 90 or more consecutive days for an amount greater than €100

## Model Accuracy

The main accuracy indicators and discriminatory power of the NEOS Score are reported in the following tables, divided into consumer and business segments:

NEOS Consumer Score

| Measures   | Development sample | Validation sample |
|------------|--------------------|-------------------|
| Gini Index | 53                 | 50                |
| KS         | 39                 | 39                |

NEOS Business Score

| Measures   | Development sample | Validation sample |
|------------|--------------------|-------------------|
| Gini Index | 57                 | 52                |
| KS         | 39                 | 39                |

## Score classes

The definition of the tranches derives from the application of a statistical methodology which maximizes the information value (or power statistic) between the classes, maintaining a monotonic decreasing trend in bad rate with an increasing Score value.

The tables below report the normalized representation of the bad rate, i.e. the **Lift**, which indicates the ratio of the *bad rate* of the class and the *average bad rate* of the portfolio.

Therefore, the Score classes are interpreted as follow: **class 01 = Highest risk, class 10 = Lowest risk**.

The following table reports the distribution of the development sample (relating to natural persons and sole traders) in the **NEOS Consumer Score** tranches:

| Tranche       | % Total | Lift | % Cum Good | % Cum Bad | % Cum Tot |
|---------------|---------|------|------------|-----------|-----------|
| 01 Low < 420  | 1.80%   | 5.14 | 1.32%      | 8.75%     | 1.80%     |
| 02 420 < 440  | 7.73%   | 3.46 | 7.53%      | 33.56%    | 9.53%     |
| 03 440 < 460  | 9.09%   | 2.08 | 15.64%     | 51.48%    | 18.62%    |
| 04 460 < 480  | 9.30%   | 1.50 | 24.38%     | 64.99%    | 27.92%    |
| 05 480 < 490  | 12.59%  | 1.01 | 36.90%     | 77.67%    | 40.51%    |
| 06 490 < 505  | 9.27%   | 0.63 | 46.41%     | 83.53%    | 49.78%    |
| 07 505 < 510  | 6.35%   | 0.55 | 52.82%     | 86.97%    | 56.13%    |
| 08 510 < 520  | 14.02%  | 0.51 | 67.69%     | 94.35%    | 70.15%    |
| 09 520 < 540  | 9.66%   | 0.24 | 78.17%     | 96.76%    | 79.81%    |
| 10 540 < High | 20.19%  | 0.16 | 100%       | 100%      | 100%      |
| Total         | 100%    | 1.00 | 100%       | 100%      | 100%      |

The following table reports the distribution of the development sample (relating to the business segment) in the **NEOS Business Score** tranches:

| Tranche |            | % Total | Lift | % Cum Good | % Cum Bad | % Cum Tot |
|---------|------------|---------|------|------------|-----------|-----------|
| 01      | Low < 360  | 1.58%   | 5.36 | 0.66%      | 10.50%    | 1.58%     |
| 02      | 360 < 380  | 2.99%   | 3.96 | 2.51%      | 23.76%    | 4.57%     |
| 03      | 380 < 400  | 2.52%   | 3.47 | 4.16%      | 32.87%    | 7.09%     |
| 04      | 400 < 420  | 5.67%   | 1.87 | 8.80%      | 42.91%    | 12.76%    |
| 05      | 420 < 440  | 11.62%  | 1.49 | 19.79%     | 60.55%    | 24.38%    |
| 06      | 440 < 460  | 17.96%  | 1.06 | 37.97%     | 80.05%    | 42.34%    |
| 07      | 460 < 480  | 13.47%  | 0.71 | 52.78%     | 90.08%    | 55.81%    |
| 08      | 480 < 500  | 21.09%  | 0.29 | 75.78%     | 96.19%    | 76.90%    |
| 09      | 500 < 520  | 7.94%   | 0.26 | 84.07%     | 98.15%    | 84.84%    |
| 10      | 520 < High | 15.16%  | 0.13 | 100%       | 100%      | 100%      |
| Total   |            | 100%    | 1.00 | 100%       | 100%      | 100%      |

## Score areas

The **NEOS Consumer Score** and the **NEOS Business Score** can be aggregated into three risk areas:

- **High risk** - classes from 01 to 03
- **Medium risk** - classes from 04 to 06
- **Low risk** - classes from 07 to 10

The table below highlights the distribution of the development sample in the various risk areas related to the **NEOS Consumer Score**:

| Risk area   | % Total | Lift | % Cum Good | % Cum Bad | % Cum Tot |
|-------------|---------|------|------------|-----------|-----------|
| High risk   | 18.62%  | 2.94 | 15.21%     | 15.64%    | 18.62%    |
| Medium risk | 31.16%  | 1.04 | 46.41%     | 83.53%    | 49.78%    |
| Low risk    | 50.22%  | 0.32 | 100%       | 100%      | 100%      |
| Total       | 100%    | 1.00 | 100%       | 100%      | 100%      |

While, the table below highlights the distribution of the development sample in the various risk areas related to the **NEOS Business Score**:

| Risk area   | % Total | Lift | % Cum Good | % Cum Bad | % Cum Tot |
|-------------|---------|------|------------|-----------|-----------|
| High risk   | 7.09%   | 4.10 | 4.16%      | 32.87%    | 7.09%     |
| Medium risk | 35.25%  | 1.33 | 37.97%     | 80.05%    | 42.34%    |
| Low risk    | 57.67%  | 1.31 | 100%       | 100%      | 100%      |
| Total       | 100%    | 1.00 | 100%       | 100%      | 100%      |

## Score factors

### Consumer

| Code | Description                                                                  |
|------|------------------------------------------------------------------------------|
| 1001 | No transactions available in the last 90 days                                |
| 1002 | Expenses clearly exceed income                                               |
| 1003 | Expenses exceed income                                                       |
| 1004 | Expenses and income are quite balanced                                       |
| 1005 | Expenses and income are quite balanced                                       |
| 1006 | Income exceed expenses                                                       |
| 1007 | Income clearly exceed expenses                                               |
| 1008 | Account history is not enough                                                |
| 1009 | The average balance is low                                                   |
| 1010 | The average balance is moderate                                              |
| 1011 | The average balance is high                                                  |
| 1012 | The average balance is very high                                             |
| 1013 | No negative transactions are available                                       |
| 1014 | The last negative transaction is recent                                      |
| 1015 | No negative transactions are available in the last days                      |
| 1016 | No negative transactions are available in the last months                    |
| 1017 | Account history is not enough                                                |
| 1018 | The trend of the minimum account balance is decreasing                       |
| 1019 | The trend of the minimum account balance is decreasing                       |
| 1020 | The trend of the minimum account balance is stable                           |
| 1021 | The trend of the minimum account balance is increasing                       |
| 1022 | Expenses in bills are not available                                          |
| 1023 | The most recent negative transaction in bills is recent                      |
| 1024 | The most recent negative transaction in bills was weeks ago                  |
| 1025 | The most recent negative transaction in bills was more than three months ago |
| 1026 | No expenses in taxes are available                                           |
| 1027 | Expenses in taxes are high                                                   |
| 1028 | Expenses in taxes are moderate                                               |
| 1029 | No cash deposits are available                                               |
| 1030 | Cash deposits are low                                                        |
| 1031 | Cash deposits are moderate                                                   |
| 1032 | Cash deposits are high                                                       |
| 1033 | No expenses in food and daily spending are available                         |
| 1034 | Expenses in food and daily spending are high                                 |
| 1035 | Expenses in food and daily spending are low                                  |
| 1036 | No mortgage instalments are available                                        |
| 1037 | Expenses in mortgage instalments are available                               |
| 1038 | No income from interest and dividends are available                          |
| 1039 | Income from interest and dividends are available                             |
| 1040 | No expenses in credit cards are available                                    |
| 1041 | The highest expense in credit cards is high                                  |
| 1042 | The highest expense in credit cards is low                                   |
| 1043 | No revenues are available                                                    |
| 1044 | The minimum revenue is low                                                   |
| 1045 | The minimum revenue is high                                                  |
| 1046 | No expenses in insurances are available                                      |
| 1047 | Expenses in insurances are available                                         |

|      |                                                                |
|------|----------------------------------------------------------------|
| 1048 | No generic expenses are available                              |
| 1049 | The minimum amount of negative transactions is high            |
| 1050 | The minimum amount of negative transactions is moderately high |
| 1051 | No expenses in home services are available                     |
| 1052 | Medium expenses in home services are high                      |
| 1053 | Medium expenses in home services are low                       |
| 1054 | No expenses in clothing                                        |
| 1055 | Medium expenses in clothing are high                           |
| 1056 | Medium expenses in clothing are low                            |

## Business

| Code | Description                                                      |
|------|------------------------------------------------------------------|
| 2001 | No transactions available in the last 90 days                    |
| 2002 | The minimum amount of transactions is very high                  |
| 2003 | The minimum amount of transactions is high                       |
| 2004 | The minimum amount of transactions is moderate                   |
| 2005 | The minimum amount of transactions is low                        |
| 2006 | No transactions available in the last 90 days                    |
| 2007 | The number of days the balance was negative is low               |
| 2008 | The number of days the balance was negative is high              |
| 2009 | The number of days the balance was negative is relevant          |
| 2010 | The number of days the balance was negative is very relevant     |
| 2011 | Account history is not enough                                    |
| 2012 | The trend of balance is decreasing                               |
| 2013 | The trend of balance is moderately decreasing                    |
| 2014 | The trend of balance is stable                                   |
| 2015 | The trend of balance is moderately increasing                    |
| 2016 | The trend of balance is increasing                               |
| 2017 | The trend of balance is clearly increasing                       |
| 2018 | No transactions are available                                    |
| 2019 | Expenses clearly exceed incomes                                  |
| 2020 | Expenses exceed incomes                                          |
| 2021 | Expenses and incomes are quite balanced                          |
| 2022 | Incomes exceed expenses                                          |
| 2023 | Incomes clearly exceed expenses                                  |
| 2024 | No transactions in liabilities and equity are recently available |
| 2025 | Transactions in liabilities and equity are recently available    |
| 2026 | No transactions in services are recently available               |
| 2027 | Expenses in services are high                                    |
| 2028 | Expenses in services are moderate                                |
| 2029 | No expenses in taxes are available                               |
| 2030 | Expenses in taxes are very high                                  |
| 2031 | Expenses in taxes are high                                       |
| 2032 | Expenses in taxes are moderate                                   |
| 2033 | Expenses in taxes are low                                        |
| 2034 | No expenses in interests are available                           |
| 2035 | Expenses in interests are available                              |
| 2036 | No cash deposits are available                                   |
| 2037 | The most recent cash deposits was few days ago                   |
| 2038 | The most recent cash deposits was weeks ago                      |
| 2039 | No revenues are available                                        |
| 2040 | The minimum revenue is low                                       |
| 2041 | The minimum revenue is medium                                    |
| 2042 | The minimum revenue is high                                      |



|      |                                       |
|------|---------------------------------------|
| 2043 | The minimum revenue is very high      |
| 2044 | No expenses in bills are available    |
| 2045 | One transaction in bills is available |
| 2046 | Few expenses in bills are available   |
| 2047 | Many expenses in bills are available  |

## Development methodology

The development process for the NEOS scoring models can be summarized in the following key analytical stages:

- Initial investigations: data collection and reading
- Sampling
- Preliminary analysis and data quality
- Transaction categorization
- Feature Engineering
- Performance definition
- Cluster analysis
- Model development
- Scaling
- Development performance
- Validation

This robust *modus operandi* is the result of years of experience in the development of risk models and represents one of CRIF's milestones.

When there are segments, or also only in order to correctly interpret the risk in relation to each score, it is necessary to normalize the scoring systems to create a single reference scale. This methodology enables a result where, for the same score, the risk is the same for different models or in relation to an established scale.

For this purpose, CRIF has developed a Score transformation function where, for a reference Score value, the good/bad ratio (i.e. the odds) doubles or halves for each constant step on the scoring scale.

The Master Scale parameters are as follows:

Reference Score = 500

Reference odds = 30

Points to Double Odds (PDO) = 30

In other words, if the odds (good/bad ratio) are 30 for a score of 500, they will be 15 for a score of 470 and 60 for a score of 530.

## Significance index

The information assets of a current account can be extremely significant, provided that the account is representative of the subject's transactions. It is therefore essential to associate the significance with a current account in order to guide the strategy for using data within the decision-making processes.

The significance index indicator is an important KPI for assessing the level of significance of current account information (private and business).

The significance index was developed using a **data-driven approach** on a representative pool, weighting **6 relevant factors** that determine the index:

- Minimum and average number of transactions per month
- Balance analyzed for the available time period
- Amount of the average incoming transaction
- Amount of the average outgoing transaction
- Presence of specific incoming categories
- Presence of specific outgoing categories

The **significance index** considers thresholds differentiated by segment Consumer and Business.

