Penalties, Inefficiencies, and Buy-in Volumes (PIBIV) dashboards
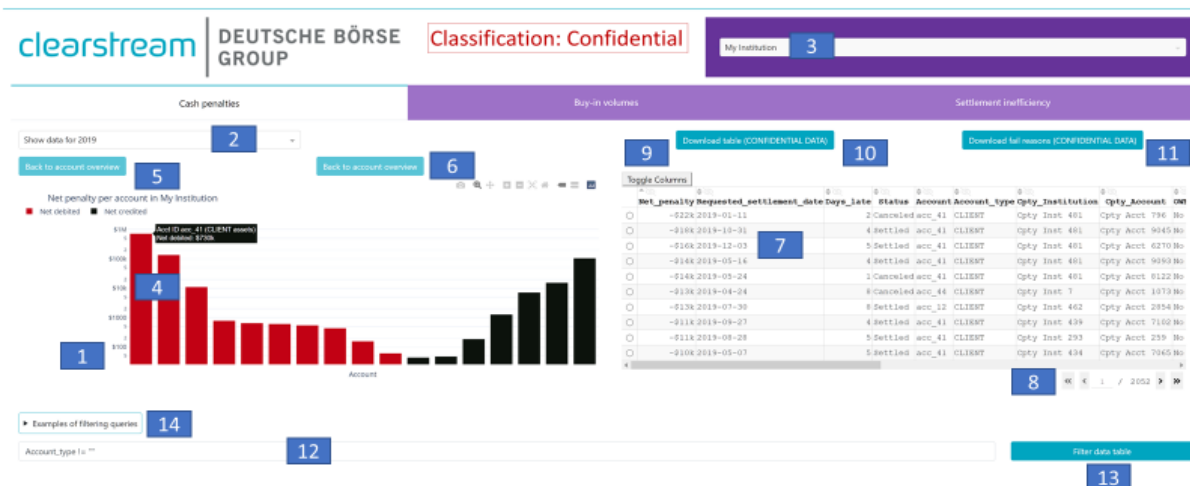
Tutorial

# PIBIV dashboards tutorial

Cash penalties tab

The bar chart on the left (1) displays late settlement cash penalties aggregated at an account level for the selected year (2) and institution (3). By hovering the pointer over a bar (4), we can see the name of the account, whether it contains assets OWNed by the selected institution or assets owned by the institution's CLIENT, and the net amount of cash penalties debited from (red bars) or credited to (black bars) the account in the selected year.

By clicking on a bar in the bar chart, it is possible to drill-down to inspect all late instructions in that account:
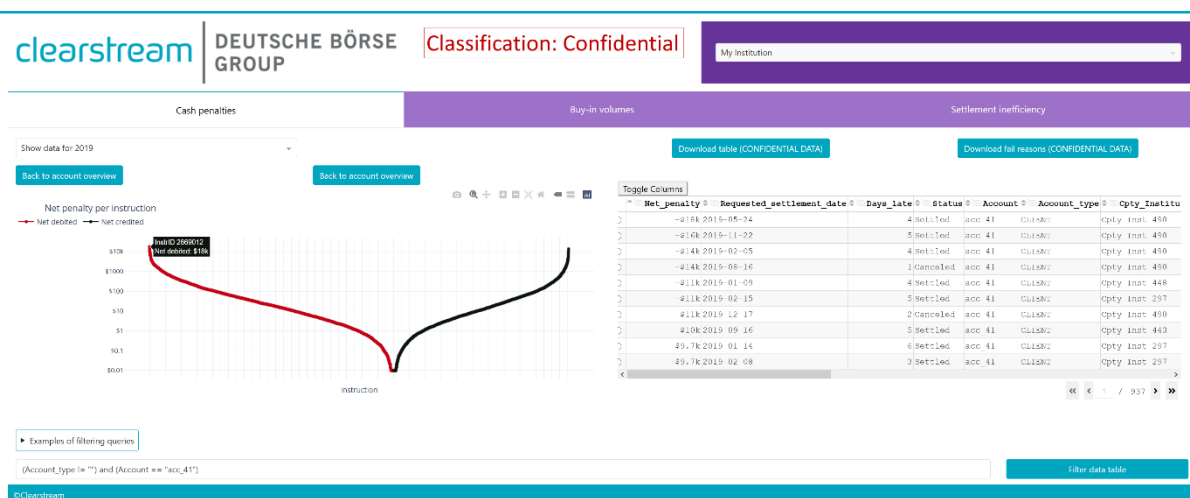
To zoom in on instructions (shown as points) of interest, hold down the left mouse button and drag the pointer diagonally over the points of interest. The view can be reset by double-

clicking on an empty patch of the chart. By further clicking on one of the points one can obtain detailed information on an individual late instruction, such as the end-of-day status and penalty for a given date (tables on the right in the image below):
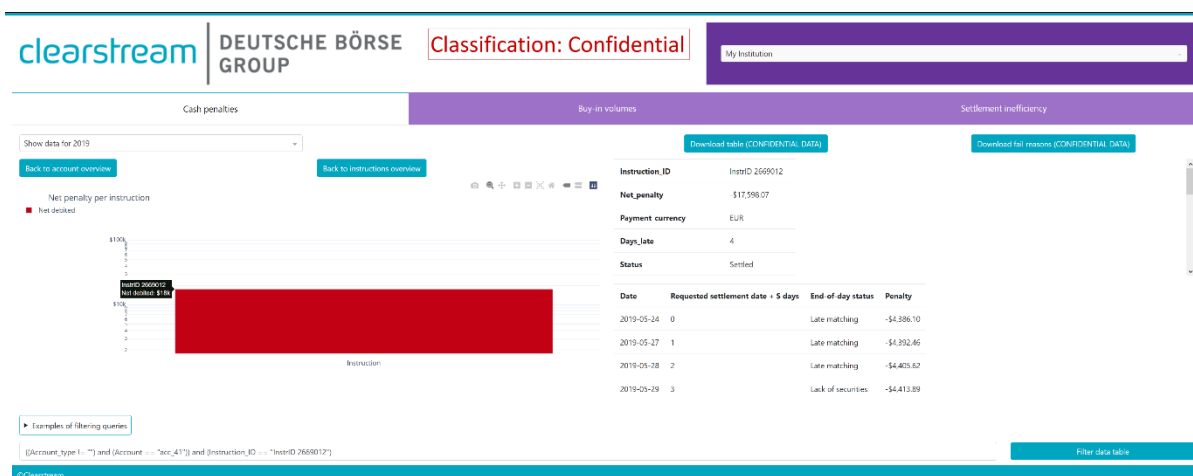
To go back to a previous level, use the buttons above the bar chart (5 and 6).

The table on the right (7) shows all late instructions submitted by an account in the selected institution. When an account is selected by clicking on a bar in the chart on the left, the table updates to show only instructions sent by that account. To scroll through the table rows, use the navigation buttons or jump to a specific page by entering the page number into the box (8). The table can be sorted over multiple columns by using small arrows next to column names (note: by default, the table is already sorted by *Net_penalty*). Table columns can be hidden by de-selecting them using the "Toggle Columns" button (9). When examining a table row and scrolling the table in a horizontal direction (with the slider), it may be helpful to highlight the row by clicking on the little circle next to the first table column (highlighting does not trigger any other function).

Note: To indicate values in billions, the dashboard uses the suffix "G" (for Giga) when showing them in the table on the right or when hovering the pointer over a bar in the chart on the left.

The table can be downloaded in its entirety in CSV (comma-separated values) format using the "Download table" button (10) and fail reasons for each day and instruction can be downloaded using the "Download reasons" button (11).

The data shown in the bar chart and in the table can be filtered by entering a query in the box at the bottom of the page (12) and then clicking on the "Filter data table" button (13). Examples of filtering queries can be found by clicking on the corresponding button (14), but in principle, filtering should be possible using any of the table columns. Once a filter has been applied, it will persist as you drill-down when clicking on the bar chart. To completely remove a filter, simply delete the query and press "Filter data table" button or reload the page using your browser.

Note: Complex filtering queries are not guaranteed to work, and may even hinder the usage of the dashboard, so customers should try to keep the queries simple. If a filtering query is giving undesirable results or the dashboard is no longer responding, simply reload the page using your browser and try a different query.

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Additional details on some table columns:

- Net_penalty: Negative values indicate that the cash penalty was debited from the account (i.e., paid out more in penalties to the counterparty than it received). **Note**: If the *Net_penalty* value is unreasonably high (for example, in hundreds of millions), inspect the *Security_quantity* value. We have noticed that some instructions have unreasonably high *Security_quantity* values, possibly because the customer incorrectly entered the *Security_quantity* as an amount **in some currency**, instead of entering it as the amount **in units**.
- Days_late: The number of business days (25th Dec and 1st Jan are holidays) an instruction **would have been** late under CSDR settlement discipline rules. With some rare exceptions, liquid equities can be late for a maximum of five business days as on the 5th business day **after** the Requested settlement date (that is, on S + 5) we assume the settlement enters the buy-in regime and is settled on the same day. Similarly, securities that are not liquid equities can be late for a maximum of eight business days, as on the 8th business day (that is, on S + 8) we assume they settled in a buy-in auction.
- Status: This column indicates what **actually** happened to this instruction (**not** what would have happened under CSDR). Instructions with *Status = Live* have not been concluded as of the time the data for the dashboard were recorded.
- Account_type: This column indicates whether the account contains assets OWNed by the selected institution or assets owned by the institution's CLIENT.
- OWN_Intra: This column indicates whether the settlement is between OWN accounts in the same institution (for example, a settlement between proprietary accounts within the same institution).
- Instruction_amount: Reference value of the settlement, defined as:
  - For settlements that involve a transfer of securities: *Security_quantity* × USD price of the security at the end of the first penalty day, or
  - For cash-only settlements: Settlement cash amount × appropriate exchange rate vs. USD at the end of the first penalty day.
- Instruction_ID: Internal Clearstream instruction ID.

Buy-in volumes tab

In terms of functionality and content, this tab is very similar to the "Cash penalties" tab which is why in this section only the differences are discussed.

The bar chart on the left displays buy-in volumes aggregated at an account level for the selected year and institution. Individual buy-in events are shown in the table on the right. Ignoring the sign for a moment, the Buy_in_volume is equal to the Instruction_amount (see above) on the buy-in auction date. Negative Buy_in_volume values indicate that the Account under consideration was at fault (that is, this is "outgoing" volume), while the positive values indicate that the Account's counterparty was at fault (that is, "incoming" volume).

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Settlement inefficiency tab

According to Article 39 of the Commission Delegated Regulation (EU) 2018/1229 (RTS on settlement discipline):

"*A participant shall be considered as consistently and systematically failing to deliver in a security settlement system, as referred to in Article 7(9) of Regulation (EU) No 909/2014, where its rate of settlement efficiency, determined by reference to the number or to the value of settlement instructions, is at least 15% lower than the rate of settlement efficiency of that securities settlement system, during at least a relevant number of days over the 12 previous months.*

The relevant number of days shall be determined for each participant as 10% of the number of days of activity of that participant in the security settlement system over the 12 previous months."
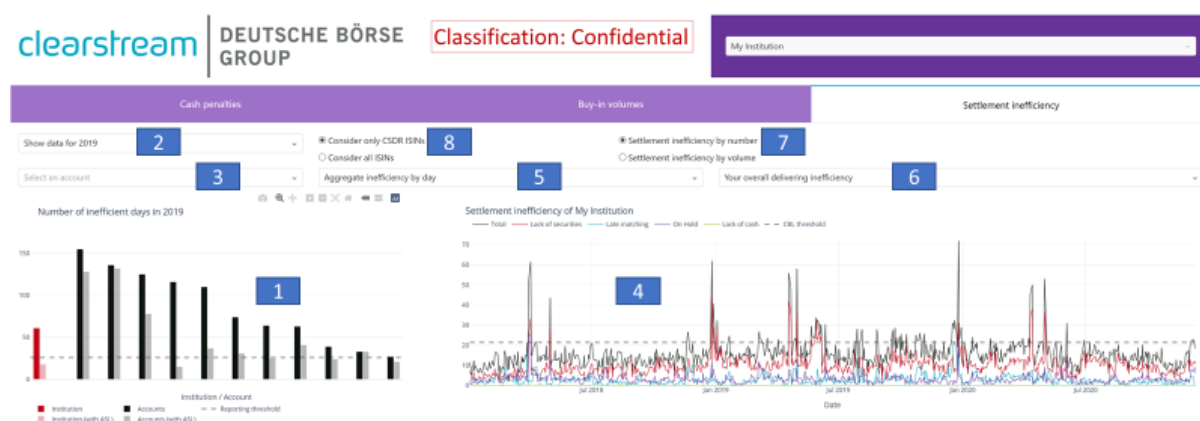
To check whether your institution **would have been** considered as "*consistently and systematically failing to deliver*" in 2019 or 2020, examine the bar chart on the left **(1)**. If the number of inefficient days for your institution (red bar) is above the 26-business day reporting threshold (dashed line), then your institution would have been reported as being systematically inefficient during the selected year **(2)**. Such institutions are advised to more closely examine their delivery (in)efficiency to avoid potential issues in the future, such as suspension from settlements activities in Clearstream (see Article 7(9) of Regulation (EU) No. 909/2014).

The black bars show the number of inefficient days for individual accounts in your institution and may be useful for determining which accounts have low efficiency of delivery. To avoid overcrowding the chart, only accounts (black bars) that are above the 26-day threshold are shown.

Note: The number of inefficient days for individual accounts (black bars) is shown for

reference only. The number of inefficient days for the institution (red bar) is the only relevant measurement when determining whether an institution is "*consistently and systematically failing to deliver*". Also, note that due to design choices, the dashboard uses a more lenient criterion of 26 business days (equivalent to 10% of business days in a year) instead of the 10% of the number of days of activity over the previous 12 months, as specified by the regulation.

Pink and grey bars show the number of inefficient days under the assumption that Automated Securities Lending (ASL if for PIBIV dashboard) or Automated Securities Lending-principal (ASLp if for CBF PIBIV dashboard) prevented 100% of delivery fails involving securities lendable by the respective service (ASL or ASLp). Institutions that would have crossed the threshold without ASL/ASLp, but would have been **below** the threshold **with ASL/ASLp**, may wish to consider signing up for the appropriate lending service as the improvement in delivery efficiency may be significant enough to help them avoid being tagged as "*consistently and systematically failing to deliver*" in the future. Accounts where the difference between the number of inefficient days with and without ASL/ASLp is greatest, may benefit the most from signing up with this lending service.

By clicking on one of the bars or by using the account drop-down menu (3), we can examine the settlement inefficiency of that institution or account as a function of time (4) (starting with Jan 2018, if data are available).

Note: If after selecting an account using the drop-down menu (3) no data are show in (4), it means that there are no failed instructions for the selected settings (6, 8).

By hovering the pointer over the black line (labelled as "Total"), we can see the percentage of instructions on a given day that failed (that is, did not settle) due to the institution's or account's fault. Coloured lines break down that percentage into four fail reasons: Late matching, lack of securities, lack of cash, or on hold. To zoom in on a region of interest, hold down the left mouse button and drag your pointer diagonally over the region of interest. The view can be reset by double-clicking on an empty patch of the chart.

Settlement inefficiency by count, or the percentage of instructions on a given day that did not settle due to the institution's or account's fault, is calculated using the following equation:

$$inefficiency\ by\ count = \frac{N_{not\ settled, customer\ at\ fault}}{N_{settled} + N_{not\ settled, customer\ at\ fault} + N_{not\ settled, customer\ not\ at\ fault}} 100\%,$$

where:
- $N_{not\ settled, customer\ at\ fault}$: Number of instructions sent by the customer that could have settled on a given date, but did not settle due to customer's fault,
- $N_{not\ settled, customer\ not\ at\ fault}$: Number of instructions sent by the customer that could have settled on a given date, but did not settle and the customer was **not** at fault,
- $N_{settled}$: number of instructions sent by the customer that could have settled on a given date and did settle.

Similarly, the settlement inefficiency by volume, or the USD volume in instructions on a given day that did not settle due to the institution's or account's fault, is calculated using the following equation:

$$inefficiency\ by\ volume = \frac{V_{not\ settled, customer\ at\ fault}}{V_{settled} + V_{not\ settled, customer\ at\ fault} + V_{not\ settled, customer\ not\ at\ fault}} 100\%,$$

where:
- $V_{not\ settled, customer\ at\ fault}$: USD volume in instructions sent by the customer that could have settled on a given date, but did not settle due to customer's fault,

- $V_{not\ settled,customer\ not\ at\ fault}$: USD volume in instructions sent by the customer that could have settled on a given date, but did not settle and the customer was **not** at fault,
- $V_{settled}$: USD volume in instructions sent by the customer that could have settled on a given date and did settle.

The dashed line indicates the settlement **in**efficiency threshold of the Securities Settlement System in question. For CBL (that is, the ICSD) this inefficiency is calculated as 100% - 92.5% × 0.85 = 21.4% (for years 2019 and 2020, 21.7% for 2021), where 92.5% is the settlement efficiency of CBL for years 2018 and 2019 (92.1% for 2020), reduced by 15% following the regulation (the 0.85 factor), and subtracted from 100% to express it as a threshold in settlement **in**efficiency. For CBF CSD, the settlement inefficiency is calculated as 100% - 89.3% × 0.85 = 24.1% for year 2019, 100% - 88.6% × 0.85 = 24.7% for year 2020 and 100% - 89.4% × 0.85 = 24.0% for year 2021. The business days when an account's or institution's settlement inefficiency is above this threshold are tagged as "inefficient" days.

Note: While CSDR settlement discipline rules use settlement efficiency, we choose to use settlement **in**efficiency in this dashboard for visualisation purposes, as it allows us to show more naturally, and on the same chart, the settlement inefficiency as the sum of four fail reasons (which we could not do if we used settlement efficiency).

If the timeseries chart looks too sparse or "noisy", we can aggregate data and examine settlement inefficiency by week, month, or year (5).

Note: If the level of aggregation or any other setting (6, 7, 8), is changed from the default setting, the CBL threshold (dashed line) will disappear as it is only defined for default settings (that is, for CSDR settlement discipline rules).

While the overall delivering inefficiency (6) is relevant from the CSDR perspective, in some cases it may be useful to examine other aspects of settlement inefficiency, such as the intrinsic inefficiency or the inefficiency of delivering cash or securities.

The "intrinsic" inefficiency is particularly interesting because it is not affected by lack of securities or cash, and thus we believe that it measures the **intrinsic (in)efficiency of settlement operations and processes**. This inefficiency is defined as the percentage of Receive Free (RF) instructions that failed due to the institution's or account's fault. Since no deliveries (of cash or securities) are made by these instructions, the only reason why a RF instruction would fail is due to operational reasons (for example, manual entry of instructions, human intervention, staffing issues, software issues). As such, we believe the intrinsic (in)efficiency represents the lowest possible inefficiency (or the highest possible efficiency) that can be achieved in an ideal scenario where there are no issues with the supply of cash or securities.

In addition to settlement inefficiency by number (or count), we can also examine settlement inefficiency by volume (7). When selected, the timeseries chart shows the percentage of failed volume in USD on a given day that failed due to the institution's or account's fault. So far, we have been looking at data based on ISINs that were within CSDR scope at the time when the failure happened. Since the reference data (that is, those that indicate whether an ISIN was within CSDR scope) restrict us to dates after Jan 2018, if we wish to examine long-term settlement inefficiency we need to step out of the CSDR universe and consider all ISINs, which we can do by clicking on (8).

By considering all ISINs, we can now inspect settlement inefficiency (9) going back as far as January 2008 (if data exists). The range of inefficiencies that we can examine is also much wider (10) and now includes settlement inefficiency of your (aggregated) counterparties, which is based on instructions that failed due to counterparty's fault. Instead of the number of inefficient days, the bar chart on the left (11) now shows the total failed volume for the institution and it's top 100 accounts (by failed volume). By clicking on a bar or using the account drop-down menu, we can select an account and examine its long-term settlement inefficiency.

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