



EMPIRICO

Enabling systematic investment in portfolio based strategies

Any strategy is better than no strategy

USER GUIDE



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Introduction

This Getting Started guides you through the main functionalities of Empirico, and clarifies each feature you can exploit within the product.

If you are an Alpha user, you will have access to all of the features, but this may change when Empirico will move to paid plans. Please keep an eye on our Pricing page and What's New page to stay up-to-date on new plans and releases.

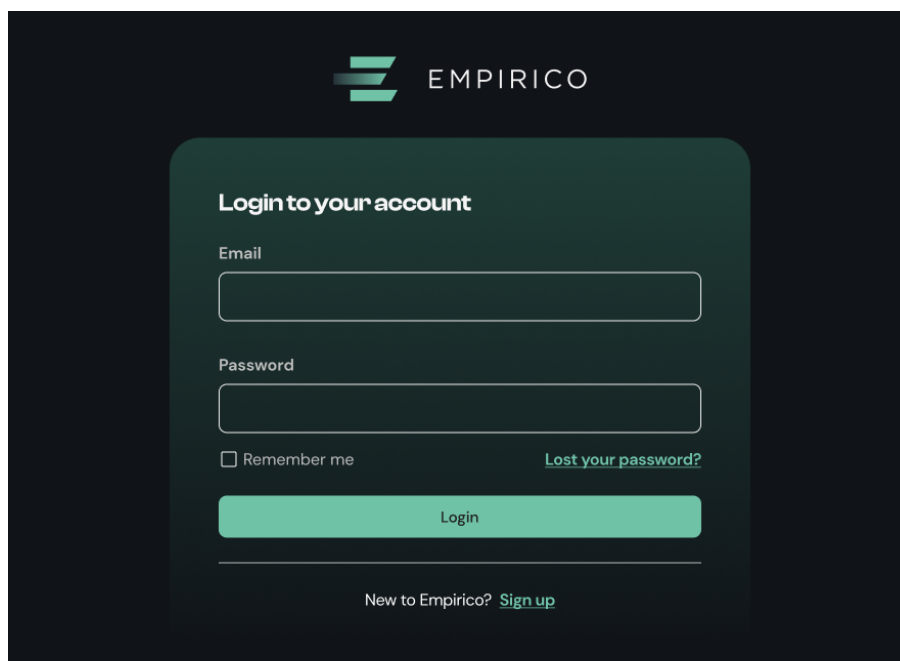
System Requirements

Empirico is a Cloud Application, meaning you only need a web browser and a fairly stable internet connection in order to use it.

While Empirico is compatible with any modern web browser, we suggest using Google Chrome in its latest edition for optimal user experience.

The Login

Empirico requires you to login to access the product. You can get your credentials by registering as an Empirico user. You will receive an email with proper instructions on how to create a username / password and access the product.



EMPIRICO

Login to your account

Email

Password

Remember me [Lost your password?](#)

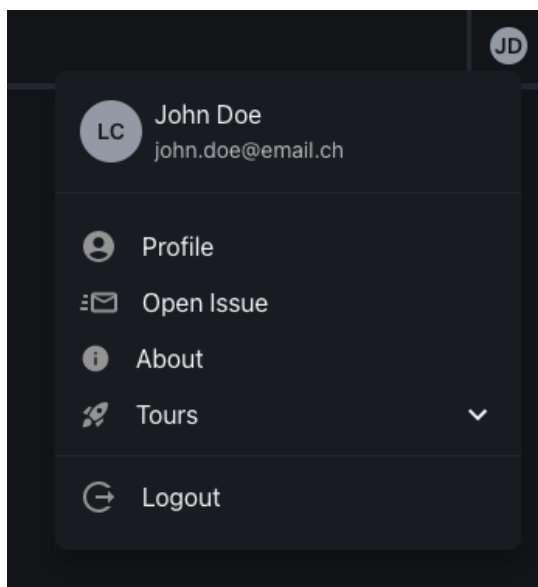
Login

New to Empirico? [Sign up](#)

The Dashboard

Once you are logged in, you will see the main Dashboard page. This page has a top bar and a central area.

On the top right side of the top bar you will see your user icon. Click on it to access a dropdown menu with some utility pages (see below) and the Logout button.



In the central area you will see the list of your simulation. This list is empty if you did not launch any simulation or if you removed all the simulations.

At the bottom right of the screen you will see a New Simulation button that opens up the new simulation configuration wizard.

The simulations table has some filters, sorting and search options at the top, and allows viewing or navigating multiple rows at the bottom.

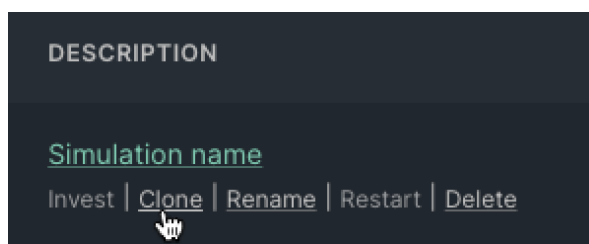
Each row of the table reports basic simulation parameters and a summary of main simulation results (see below, Simulation Overview).

DESCRIPTION	CREATION DATE	STATUS	DURATION	START / END SIMULATION	REBALANCE INTERVAL	SCORING STRATEGY	RANKING / SELECTION STRATEGY	DISTRIBUTION	BELONGING TO INDEX	START CAPITAL	SECTOR / INDUSTRY	REGION
Simulation name Invest Clone Rename Restart Delete	September 26, 2022	Success	12 seconds	from 2012-07-26 to 2022-06-26	3 months monday	SMA (8 days)	ASC / TOP 1	Equal Weight		\$10M	Communication Services / Broadcasting	AG

Configure and run a new simulation

This is one of the core features of Empirico. To configure a new simulation, you have two options:

1. Click on the New Simulation button at the top of the simulation table of the Dashboard
2. Hover with your mouse on an existing simulation name and click on Clone (see below for more details)



If you start a simulation configuration from scratch (option 1 above), a new window will appear with a wizard that guides you through each necessary step. The wizard is divided into 4 main steps:

1. Configure basic simulation parameters
2. Identify investable universe
3. Configure strategy
4. Final settings

Configure basic simulation parameters

As a first step, you need to configure some basic parameters of the simulation such as Initial Capital to be invested, Slippage, Start and End time of the simulation, Portfolio Rebalancing frequency, and associated costs and fees.

You can hover your mouse over the “i” icon next to each parameter to get a description of what is meant by the value, and its effect on the simulation.

Identify investable universe

Empirico will run the simulation against a universe of eligible securities. In this section you can bound this universe by providing eligibility criteria, such as Sector/Industry, Market Region/Exchange/Currency, Belonging of securities to a specific Index (over time), and Market Capitalization.

You can hover your mouse over the “i” icon next to each parameter to get a description of what is meant by the value, and its effect on the simulation.

Configure strategy

In this core step you will provide Empirico the criteria to score, rank, and select the securities of your portfolio from the previously defined investable universe. You do this by defining a Technical Indicator to score the securities, a strategy to Rank the scored securities, a Maximum number of selected securities, and eventually a strategy to allocate your capital throughout your portfolio.

In terms of capital allocation, Empirico implements the following modes (more will be added in the future):

1. Equal Weight: the capital will be equally distributed between the securities in the portfolio.

You can hover your mouse over the “i” icon next to each parameter to get a description of what is meant by the value, and its effect on the simulation.

If you select an indicator, an external link to an explanation of the technical indicator is provided.

Final settings

In the Final Setting step you can give the simulation a name (this can be modified afterwards in the overview table) and choose a Benchmark Index to be included in the reporting details.

You can hover your mouse over the “i” icon next to each parameter to get a description of what is meant by the value, and its effect on the simulation.

Clone a simulation

Once you have configured and run a simulation, you have the option to hover its name and select “Clone”. This is a shortcut that opens up the configuration wizard with the selected simulation parameters already filled in.

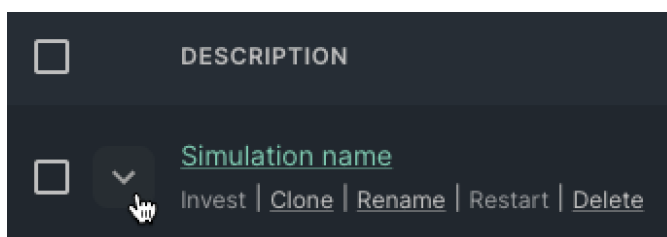
The Clone feature is especially useful if you want to run simulations that differ only for some limited parameters and then check the effect of varying these parameters.

Rename a simulation

In the simulation overview table, hover your mouse on the title of the simulation you want to rename and click “Rename”. This will make the title editable. Once you are done editing just press the Enter button on your keyboard to save your changes.

Simulation Overview

The simulation overview is represented by each row in the simulation table of the Dashboard. You can access the full overview of a simulation by clicking on the arrow symbol next to the simulation name.



This will expand the row and you will see the data about the simulation. These data are of two kinds:

1. Simulation basic parameters: these values provide you with a concise overview of the parameters you selected in the simulation configuration wizard.
2. Simulation basic results: these values are reported in green color and provide you with the simulation Overall Performance, the Compound Annual Growth Rate (CAGR), and the Max Drawdown observed in the simulation period.

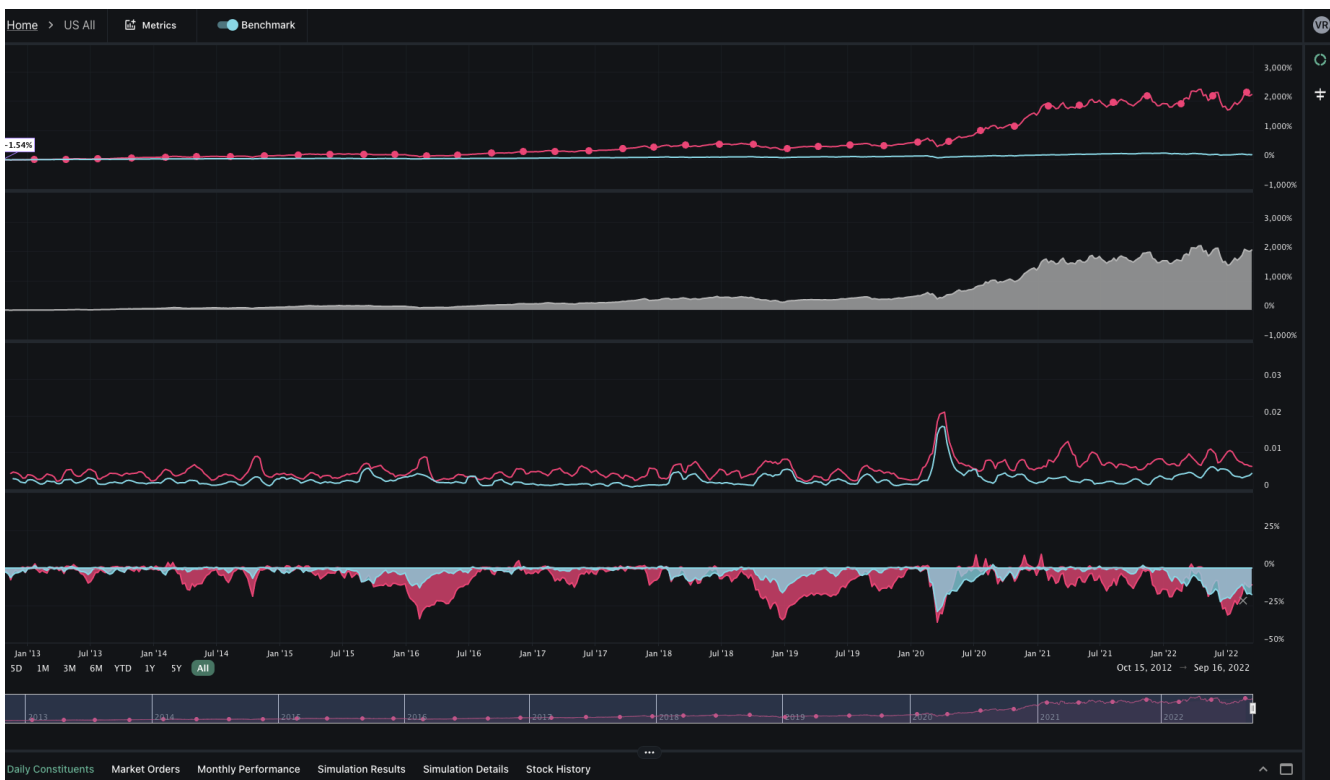
DESCRIPTION	CREATION DATE	STATUS	DURATION	START / END SIMULATION	REBALANCE INTERVAL	SCORING STRATEGY	RANKING / SELECTION STRATEGY	DISTRIBUTION	BELONGING TO INDEX	START CAPITAL	SECTOR / INDUSTRY	REGION
Simulation name	6 days ago	Success	22 minutes 6 seconds	from 2013-01-04 to 2022-12-05	3 months monday	ROC (180 days)	ASC / TOP 5	Equal Weight	GSPC	\$10M	All / All	All
	BENCHMARK	REGIME FILTER / WINDOW SIZE	SLIPPAGE	MANAGEMENT FEES	TRANSACTION FEES	MARKET CAPITALIZATION	EXCHANGE	CURRENCY	SECURITY TYPE	OVERALL PERFORMANCE	CAGR	MAX DRAWDOWN
	GSPC	SMA (30 days)	1.00%	1.00%	0.20%	greater than \$2B	All	USD	Common Stock	-9.37%	-0.99%	101.20%

Simulation Details View

To access the simulation details and reporting, just click on any simulation name.

If you want to keep your dashboard open, we recommend to right click on the simulation and select “Open link in a new tab” in the browser menu that appears. This will allow you to keep simultaneously open both the dashboard and multiple simulations, which is useful if you want to investigate and compare differences.

The Simulation Details view is composed by several panes / areas:



- **A top bar**, including a link to the dashboard, the simulation name, the Metrics menu and a toggle for the Benchmark Index selected.
- **A central left area**. By default, you will see the Performance Over Time chart in this area, but you can add more charts using the Metrics menu in the toolbar.

- **A bottom left area.** By default this is collapsed, but you can expand it by clicking on the expand icon. This area contains several tabs, each reporting a specific detail about the simulation:
 - Portfolio Daily Constituents
 - Market Orders
 - Monthly Performance
 - Simulation Results
 - Simulation Details
 - Stock History

We will review each of these in the next sections.

- **A sidebar on the right.** This is also collapsed by default. It reports two icons that expand it and provide you with the corresponding reporting:
 - Daily Portfolio Distribution
 - Portfolio Contribution Over Time

We will review both in the next sections.

Performance Over Time

The main charting of the simulation detail view is the simulation Performance Over Time.

From this chart you can monitor the evolution of your portfolio over time, and compare it to the benchmark you selected.

If you hover on the chart lines you will see performance of your simulation and the benchmark on the top left corner of the chart.

You can zoom any area of the chart and limit the period to analyze either dragging an area with your mouse over the chart or by using the bottom ruler.

By hovering over the chart title (top left corner) a menu appears on the top left corner and you can access two functionalities:

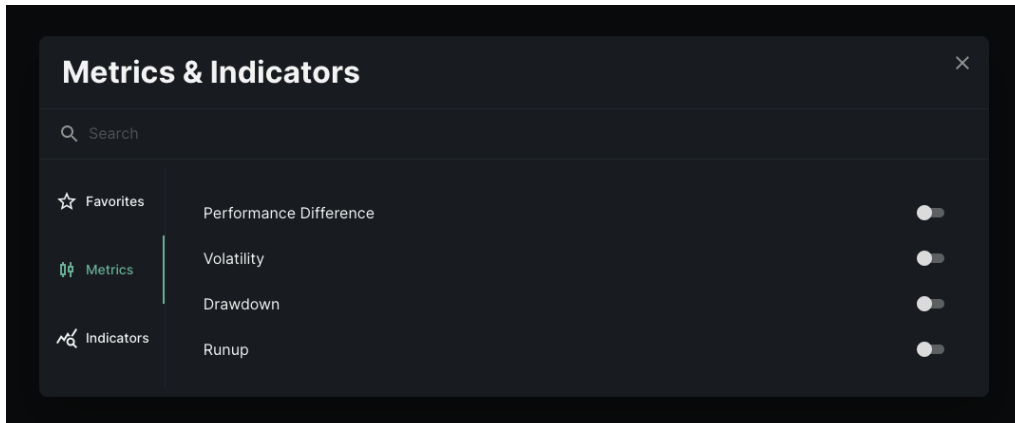
- Set the chart scale to a logarithmic (LOG) - your chart will be rescaled with a LOG scale on the Y axis.
- Adjust performances to the selected time period - your chart will be adjusted with performance lines starting from the beginning of the selected period.

Simulation Metrics

You can open up the metrics panel from the top bar of the simulation detail view. From this panel you can enable 4 kinds of metrics:

- Performance difference
- Volatility

- Drawdown
- Runup



If you limit the zooming area of the Performance Over Time chart (by dragging your mouse over the chart or using the ruler at the bottom) all these metrics – if enabled – will change accordingly.

This way you will always get a consistent view in respect to the time period you want to focus on.

Performance difference

This chart will appear below the Performance Over Time chart, and will plot the difference between your strategy performance and the benchmark index performance.

When you hover your mouse on the chart you will see the actual value of the difference at any point in time on the top left corner of the charting area.

Volatility

This chart appears stacked below the Performance Over Time chart, and plots the volatility of both the simulation and the benchmark at any point in time.

When you hover your mouse on the chart you will see the actual values of volatility at any point in time on the top left corner of the charting area.

Drawdown

This chart appears stacked below the Performance Over Time chart, and plots the drawdown of both the simulation and the benchmark at any point in time.

When you hover your mouse on the chart you will see the actual drawdown values at any point in time on the top left corner of the charting area.

Runup

This chart appears stacked below the Performance Over Time chart, and plots the runup of both the simulation and the benchmark at any point in time.

When you hover your mouse on the chart you will see the actual runup values at any point in time on the top left corner of the charting area.

Condensed drawdown and runup

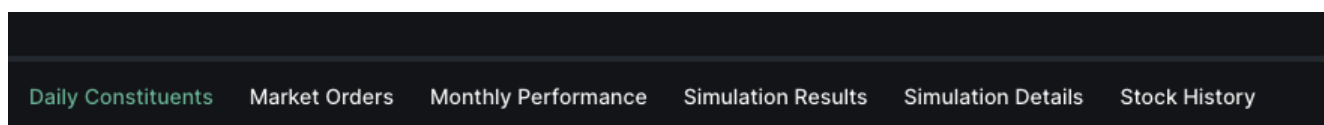
From the Metrics panel, if you enable both drawdown and runup you will get a condensed chart plotting both for the simulation and the benchmark at any point in time.

When you hover your mouse on the chart you will see the actual drawdown/runup values at any point in time on the top left corner of the charting area.

Simulation Main Reports

On the left bottom area of the simulation detail view you can expand the simulation main reports.

This area includes several tabs, each representing a different report. Some of these reports are overall details about the simulation while others represent the situation at a certain point in time as selected by the user.



Portfolio Daily Constituents

This tab has a table where you can access the list of securities that are included in your simulation portfolio at any given day.

On the top of the table you can navigate the days of the simulation period and get the total portfolio market value for the selected day.

You can change the day either by clicking on any point on the Performance Over Time chart or by using the single arrow (< or >) at the top of the table.

If you use the breaking arrows (|< or >|) instead, you will navigate directly to rebalancing days.

The constituents table reports several attributes for each security: Sector/Industry, Quantity in the portfolio, Actual Price, Cost Price, Change in price, Actual Market Value and the total Weight of the security in the portfolio.

If you have selected a rebalancing day you will also see an indication of the transaction type next to the Quantity. These types are:

- BUY – it means the position/security was not in the portfolio and entered at rebalancing
- SELL – it means the position/security was in the portfolio and was extinguished
- ACCUMULATE – it means the position/security was in the portfolio, its quantity has been increased at rebalancing, and it is still in the portfolio. The quantity that was bought is reported in parenthesis.
- REDUCE – it means the position/security was in the portfolio, its quantity has been decreased at rebalancing, and it is still in the portfolio. The quantity that was sold is reported in parenthesis.

Market Orders

This tab lists all the market orders executed on a certain date in the lifespan of the simulation.

Market orders are available only at rebalancing periods, that can be navigated using the breaking arrows at the top of the table (< or >).

At the top of the table some aggregated information is reported, namely the number of transactions, the total volume bought / sold, the total transaction costs, and the turnover percentage.

For a given rebalancing day, the list of market orders executed is then reported. For each order the table also reports the kind of effect on the portfolio (buy, sell, reduce, accumulate).

If you zoom the Performance Over Time chart and click on a rebalancing dot, the corresponding order list will also be displayed in the Market Orders tab.

Monthly Performance

This tab reports a double-entry table showcasing the years and months of the simulation, and the corresponding performance for both the benchmark and the simulation.

Benchmarks and simulations can be toggled, and the user can also get only the performance difference between them.

Simulation Results

This tab is a general summary of the simulation results, with several indicators of the goodness of fit of its results.

The majority of indicators are reported daily, weekly, monthly, quarterly, and yearly.

Simulation Details

The simulation details tab overviews the basic parameters of the simulation, alongside general indicators of its total performance, including the CAGR (also available in the Simulation Results), the Overall Performance, and the Max Drawdown.

Stock History

The stock history tab allows the user to follow the history of a specific stock in the lifespan of the simulation.

The user can select any stock that entered the portfolio at any given time and check exactly when it was bought, sold, accumulated or reduced.

For each of these events regarding a single stock, the system also reports the quantity and the price of the trade.

Simulation Distribution and Contribution

The Simulation and Distribution reports can be accessed by expanding the right-sidebar of the main window.



Daily Portfolio Distribution

This report shows the distribution of instruments within the portfolio according to their Sector, Exchange, and Currency.

You can change the day either by clicking on any point on the Performance Over Time chart or by using the single arrow (< or >) at the top of the table.

If you use the breaking arrows (|< or >|) instead, you will navigate directly to rebalancing days. This is generally the best option to see how the distributions change over time at each rebalancing day.

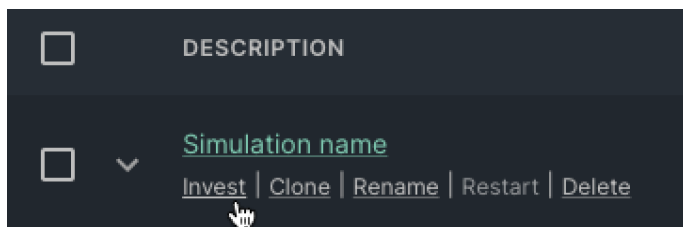
Portfolio Contribution Over Time

This report showcases the contribution of each stock to the performance over time. Contributions may be positive or negative, and the user can decide to toggle their absolute or percentage value.

The report refers to the period selected using the ruler under the Performance Over Time chart, meaning that if the user wants to change the reference period should actually use this ruler.

Active investment

This feature can be activated from the simulation overview table and selecting “Invest” hovering on a simulation name.



Active investment is a functionality that allows the user to run the simulation against future data, moving beyond simple backtesting.

This feature is not to be confused with active trading: the user still has to make market orders and trades on any third-party application of choice.

However, Empirico will generate a market order list for the user that fits the strategy, and allows to correct the portfolio trades over time.

Investment configuration

Once the user click on “Invest” a brief wizard appears asking for some basic active investment configurations, namely:

- Initial cash: the initial liquidity to distribute in your portfolio
- Start date: the date when the investment is supposed to begin.
- Slippage: the slippage to be kept as liquidity.

Once you open your investment, you can also add any pre-existing position that will be considered and rebalanced according to the starting simulation parameters.

Investment view

The Investment View is divided into three main areas:

Investment Detail							
DESCRIPTION	CREATION DATE	STATUS	LAST UPDATE	FIRST REBALANCE DATE	NEXT REBALANCE DATE	LIQUIDITY	SLIPPAGE
Copy - US_ROC_175d_10_2M_#25 (anegrini) Redeem View Simulation Delete	August 3, 2022	ACTIVE	August 4, 2022	2022-08-05	in about 1 month 2022-10-07	\$285	0.00%
Positions				Market Orders			
TODAY - SEPTEMBER 2, 2022 Today Last 1 positions update: 04-08-2022				REBALANCE DATE			
SECURITY		QUANTITY	SECTOR/INDUSTRY		2022-08-04		
Current Account USD		Liquidity \$284.6	-				
Security		Shares	-		+		
ATI Allegheny Technologies Incorporated		Shares 47	Industrials Metal Fabrication				
BTU Peabody Energy Corp		Shares 61	Energy Thermal Coal				
CEG		Shares 17	Utilities				
Last update: August 4, 2022							

- A top area with summary information about the investment
- A bottom-left area reporting your portfolio composition on specific dates
- A bottom-right area listing all generated market order lists.

The top area reports basic information about the active investment, including first and next rebalancing date, liquidity and slippage as set in the configuration wizard.

Invested positions

This area lists the positions in the portfolio on a certain date. The position quantity can be modified and adjusted anytime by simply clicking on it and changing the value.

This feature allows you to keep a match between your actual portfolio and the active investment Empirico uses as a basis for the next rebalancing. Indeed, given that Empirico is not a tool to implement real trades, they should be managed in a third-party application of choice.

For this reason, it is possible to observe some mismatch between the market order list suggested by Empirico and the actual execution of orders (e.g. you may not be able to buy the exact quantity suggested). This mismatch can be reconciled by modifying the quantity of each instrument. Prices will be adjusted automatically.

In order to maximize the usefulness of the active investment feature of Empirico, it is very important to resolve any mismatch before a rebalancing is calculated by the tool. You do not necessarily need to do that, but it would boost the soundness of the final outcome.

Empirico will also remind you via email that a rebalancing day is approaching, so that you have time to reconcile any discrepancies with your actual invested portfolio.

Market Orders

From the first rebalancing date (selected by the user in the active investment configuration wizard) Empirico calculates the Market Order list according to the backtested strategy that originated the investment.

This process is performed at each rebalancing period. Empirico provides the user with the orders to be traded on a rebalancing day the day before rebalancing, using the last available end-of-day data.

You can access the order list from the bottom-right area, and you will also get an email with a PDF file containing the market orders to be executed.

Redeem active investment

In the top area, if you hover over the investment name, you have the possibility to redeem your investment. Redeeming means that the investment stops being active and you will not receive any market order list in the future.

Please notice that this action is not revertible.

User profile management

By selecting the user avatar on the top right side of the screen the user can access the Profile view. From this view you can permanently delete your account or change your password.

Report an issue

By selecting your user avatar on the top right side of the screen the user can report an issue found in the system by selecting Open Issue.

Issues can be bugs or defects, but also feature requests or general feedback.

The reporting form will send an email to the Empirico team, that will take charge of the request and will promptly respond.

Getting help

Empirico's team puts a lot of effort into following our users' needs. Should you need any help using the system, feel free to contact us anytime. We will make sure to come back to you as soon as possible.