

# Add-in Excel for Economatica

## Getting started

The following instructions are summarized and provide you with a basic understanding of the topic. Please contact our support team with any questions.

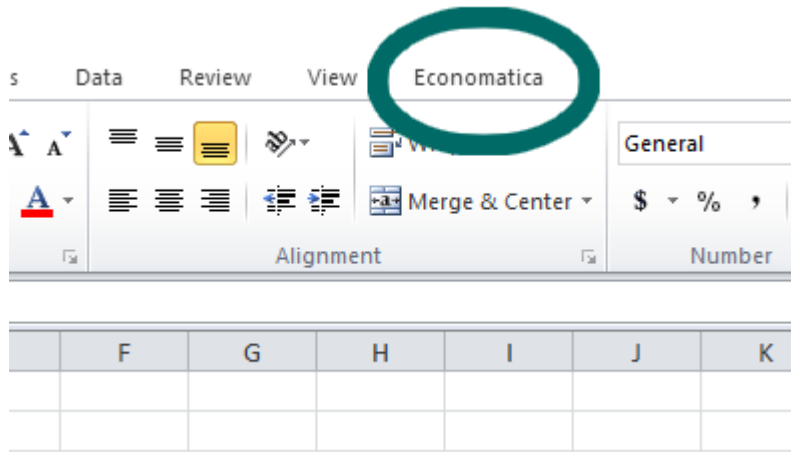
Economatica's "Add-in for Excel" is an application that allows you to access the Economatica server database directly through Excel (without using the proprietary interface of the Economatica system).

Initially click on the icon below to download the Economatica's "Add in for Excel" application.



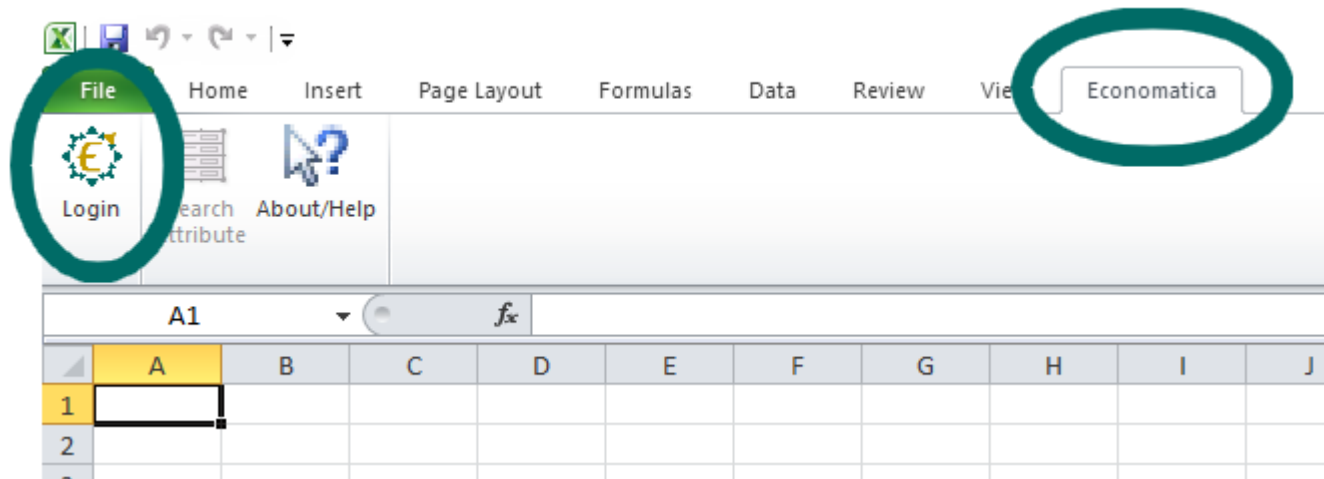
Then run this program.

After executing it your Excel should pass to display a tab called "Economatica".



In order for your Excel to be able to access the Economatica servers you will need to log in. The log in will be done through your Excel. Click the "Log in" button that is located in the "Economatica" tab of your Excel.

Log in using the same email and password you use to access the proprietary interface of the Economatica system.



You must edit functions in Excel cells so that they display data extracted from Economatica servers.

Example of a function: =economatica ("msft"; "close" ;; "2017-11-20").

If you fill a cell with the above function this cell will now present Microsoft's (MSFT) closing price on 11/20/2017.

For each specific task there is a different function as described below

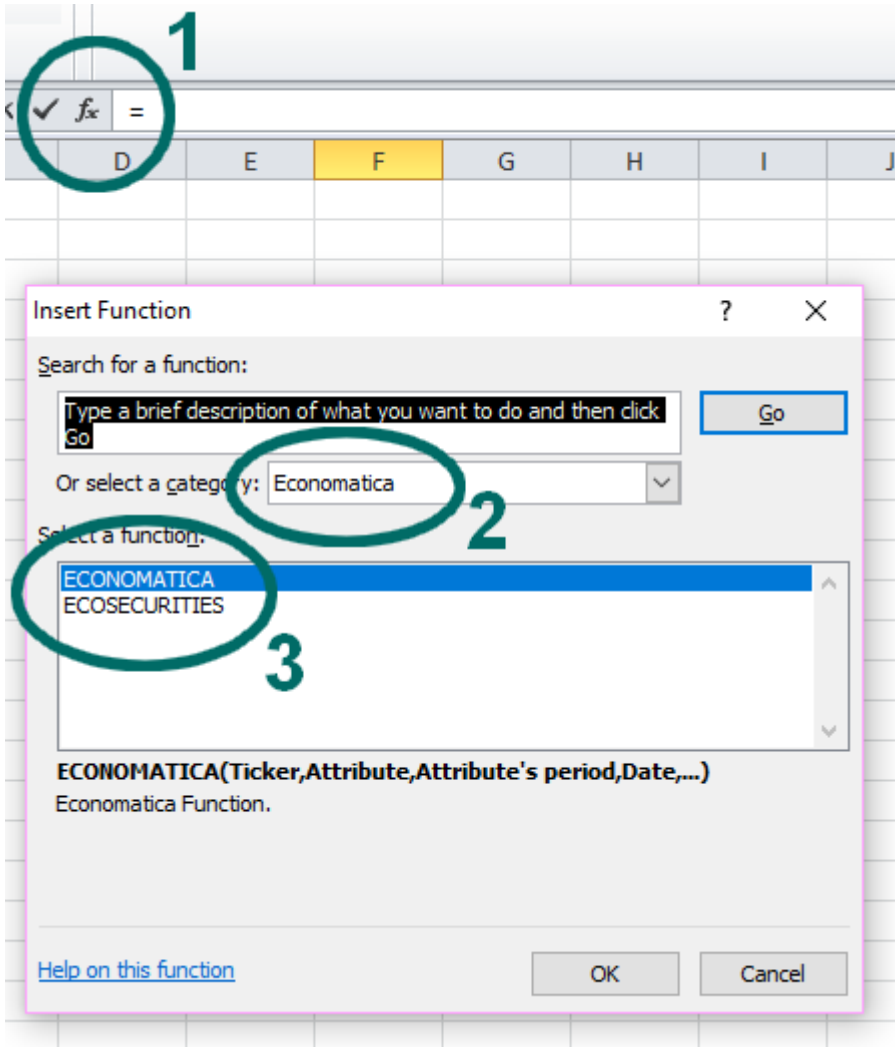
- Function ECONOMATICA (returns a data item or a historic series)
- Function ECOSECURITIES (returns a list of securities)
- Other functions that are detailed in this document

There are 3 ways you can create functions in Excel:

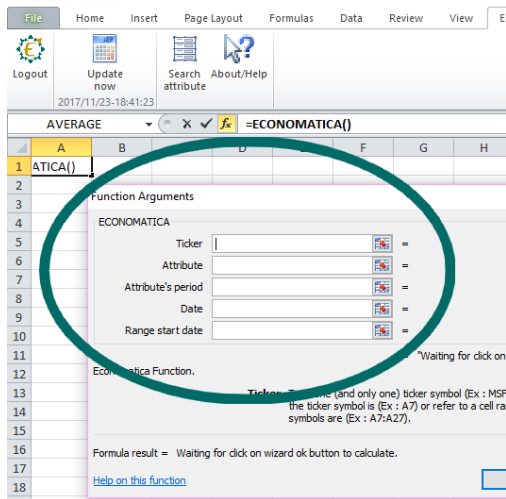
- Using the Excel function editor;
- Typing directly into the Excel cell itself (as in the example above).
- By copying a screen of the Economatica system

Below we describe how to create each of these functions using the Excel function editor. Further below in this document you will find instructions on the two alternatives (type directly into an Excel cell or copy from a screen in the Economatica system)

To access the Excel function editor click the Excel function icon (image 1), select the "Economatica" category (image 2) and then double-click on the desired function :ECONOMATICA, ECOSECURITIES, etc (image 3)



Excel will then offer its function editing screen. The following sections contain the instructions to complete each of the fields you can bring into Excel.



## Function ECONOMATICA (returns a data point or a historic series)

### Introduction

Through the function ECONOMATICA the user can obtain two types of content:

- A data item (a price quote from a certain date, or earnings from a certain date, or the company sector, or the name of a fund manager, etc)
- A historical series for a data item (historical series of prices for a selected period, historical series of earnings for a selected period, etc)

Below are the instructions on filling each of the fields for the function ECONOMATICA in order to obtain the desired data.

Not all the fields need to be filled. You should fill only the fields that are necessary and sufficient to define the desired data.

### Filling the field TICKER

In the field "Ticker" you must enter the code of the security whose information you want.

For unlisted securities (funds, etc.) enter the same code used in the proprietary interface of the Economatiga system.

The ticker field can be filled in 3 different ways:

- Enter a ticker. Example: "MSFT" (between double quotation marks);
- Fill in with the coordinates of a cell where you previously entered the desired ticker. Example: A3 (without quotation marks);
- Place a range of cells where you previously entered the various securities' tickers for which you want the information. Example: A3: A53 (without quotation marks).

## Filling the field ATTRIBUTE

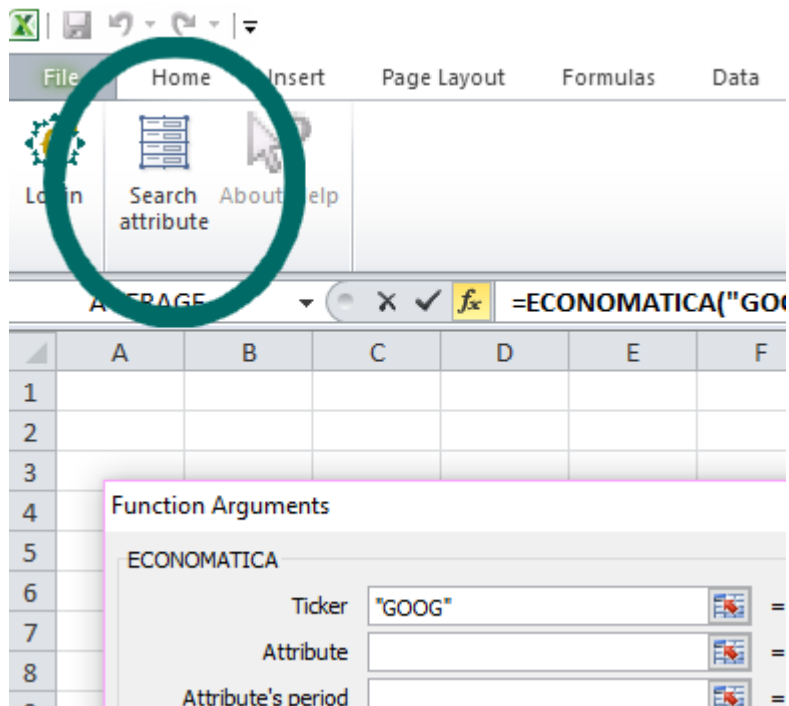
In the field "Attribute" you should indicate the information you want. Examples: closing price, traded volume, volatility, return, P / L, sector, net earnings, net revenue, ROE, EBITDA margin, and all the other hundreds of possibilities that are offered in the proprietary interface of the Economatica system.

There are two ways to fill the "Attribute" field :

- Choosing the attribute from a list (recommended, easier)
- Entering the attribute name

### Choosing the attribute from a list

Place the cursor on the "Attribute" field and click on the icon highlighted in the image below to access the list of all available attributes.



You will then access a screen similar to the attribute selection screen of the proprietary interface of the Economatica system. Please contact our support team if you have questions about navigating this screen.

### Entering the attribute name

The exact name that should be used is the one that appears in the columns of the Screening window of the ENGLISH version of the Economatica system (proprietary interface).

Name	Close 22Nov17 adj by CA's orig currency	Volume\$ in this Day orig currency in thousands	Volatility 22Nov17 1 years orig currency	Return in this year (from 31Dec16 to 23Nov17) orig currency adj by CA's
<input type="checkbox"/> 3526 Westinghouse Air Brak...	73.08	26,889	23.33	-11.48
<input type="checkbox"/> 3527 Westlake Chemical Corp	94.79	76,874	25.94	70.80
<input type="checkbox"/> 3528 Westmoreland Coal Co	1.37	956	75.42	-92.25
<input type="checkbox"/> 3529 Westrock Co	58.79	47,812	19.71	19.23
<input type="checkbox"/> 3530 Westwater Resources, L...	1.07	326	93.99	-21.90
<input type="checkbox"/> 3531 Westwood Hldg Group L...	67.20	640	24.86	15.78

Therefore, to know the exact names to be used in the "Attribute" field, you must follow the steps below:

- Connect the proprietary interface of the Economatica system;
- Switch to English
- Open a Screening window;
- Create a column with the desired information;
- Note the name used in the column header (name only, not including parameters).

Please contact our support team if you do not know how to operate the proprietary interface of the Economatica system.

## Filling the field ATTRIBUTE'S PERIOD

Depending on the attribute chosen in the previous field, you must enter the desired period. Example: the attribute "Return" can be "in the year", "in 1 month", "since 05/05/2015", "since the beginning of the series", etc.

Several attributes are not associated with a period however and for these this field should be left blank. Examples: closing, stockholder's equity, sector, etc. The period should be written in double quotation marks, in English, and must adhere to the pattern of the examples below.

For items like return, volatility, etc., the options are:

- "1d", "21d", "52w", "5y", etc;
- "YTD" (year to date), "QTD", "MTD", "WTD";
- "from start" (from the beginning of the price series);
- "yyyy-mm-dd" (since a specific date);
- A5 (provide the coordinates of the cell where you previously entered the desired period).

For items such as net earnings, EBITDA margin, etc., the options are:

- "3m", "12m", "in fiscal year" (since the beginning of the fiscal year of the company);
- A5 (provide the coordinates of the cell where you previously entered the desired period).

## Filling the field DATE

In this field you will indicate the date for which you want the information chosen in the "Attribute" field. Example: the closing quote on 5/5/2015 or on 12/31/2017 or today or a month ago, etc.

Several attributes are not associated with a date however and for these this field should be left blank. Examples: sector, name of fund manager, etc.

The date should be written in double quotation marks, in English and must adhere to the pattern of the examples below.

For daily items such as closing, volatility, P / L, etc. the options are:

- "yyyy-mm-dd" (on a specific date);
- "D-0" (on the last day already closed), "D-1" (one day before the last day already closed), "D-2", etc.;
- "D-1M" (one month before the last day already closed), "D-2Y" (two years before the last day already closed), "D-52W", etc.;
- "latest" (the last day in which this security was traded. This date will be different from D-0 only for illiquid securities that did not trade on D-0);
- A5 (provide the coordinates of the cell where you previously entered the desired date).

For quarterly items such as net earnings, EBITDA margin, stockholder's equity, etc., the options are:

- "yyyy-mm-dd" (on a specific date);
- "latest" (from the latest financial statement available for that company);
- "Jan / yyyy", "Feb / yyyy", etc. (of the financial statement with date in the specified month);
- "<Mar / yyyy" (from the financial statement dated between 8 / Jan and 7 / Apr) (\*);
- "<Jun / yyyy" (from the financial statement dated between April 8 to July 7) (\*);
- "<Sep / yyyy" (from the financial statement dated between 8 / Jul and 7 / Oct) (\*);
- "<Dec / yyyy" (from the financial statement dated between 8 / Oct and 7 / Jan) (\*);
- A5 (provide the coordinates of the cell where you previously entered the desired date).

(\*) These 4 options (with "<" sign before the name of the month) are useful when working with companies with irregular fiscal years, i.e., publish statements on dates other than 31/Mar, 30/Jun, 30/Sep and 31/Dec.

## Filling the field RANGE START DATE

This field should be populated only when you want to get information for a range of dates and not just for a single date.

In this field you must enter the start date of the desired series. The end of the series will be the date you previously specified in the "Date" field.

The options are:

- "yyyy-mm-dd" (since a specific date);
- "20d" (20 days before the end date specified in the "Date" field), 52w, 2y, etc.;
- A5 (provide the coordinates of the cell where you previously entered the desired date).

## Filling the field INTERVAL

This field should be populated only when you want to get information for a range of dates and not just for a single date.

The options are:

- "d" (display values every day within the chosen date range);
- "w" (show only the values of the Friday of the weeks within the chosen date range and in case of cumulative values (\*) show the accumulated values in the week);
- "m" (show only the values of the last day of the months within the chosen date range and in the case of cumulative values (\*) show the accumulated values in the month);
- "q" (show only the values of the last day of the quarters within the chosen date range and in the case of cumulative values (\*) show the accumulated values in the quarter);
- "y" (show only the values of the last day of the year within the chosen date range and in the case of cumulative values (\*) show the accumulated values in the year);
- A5 (provide the coordinates of the cell where you previously entered the letter ("d", "w", "m", "q", or "y") representing the desired interval.

(\*) cumulative values are those associated with a period and not a single date. Examples: traded volume for a period, fund inflows for the period, maximum quote for the period, etc.

## Filling the field CURRENCY

The Economatca database covers several countries so there is data in several different currencies (quotes, financial statements, etc.). This field allows you to convert the data to other currencies.

The options are:

- "USD" (converts to US dollars);
- "EUR" (converts to Euros, not available for some currencies);
- "Inflation adjusted" (shows values in original currency but updated by inflation, not available for some currencies);

In cases where the function must return a historical price series (does not apply to attributes such as Earnings, etc.), this field will also allow the series to start with a base equal to 100.

The options are :

- "Rebased to 100" (adjusts so that the start of the series equals 100)
- "USD rebased to 100" (converts to US dollars and then adjusts so that the start of the series equals 100)
- "EUR rebased to 100" (converts to Euros and then adjusts so that the start of the series equals 100)
- "Inflation adjusted rebased to 100" (adjusts for inflation and then adjusts so that the start of the series equals 100)

## Filling the field MULTIPLIER

Use this field to define whether the values should be presented in thousands, millions, etc.

This field should be filled only for items (attributes) where the multiplier makes sense. Examples: Total Assets, Revenue, Volume traded, etc.

This field should not be filled for items (attributes) such as Closing Price, Net margin, Earnings per share, etc.

The options are:

- "UNITS" (apply no multiplier)
- "THOUSANDS"
- "MILLION"



- "BILLIONS"
- "DECIMAL" (some attributes like Return, Volatility, etc are brought in from Economatica expressed in percentage (ex 12.7). If your preference is to display the values in decimal form then use the option "DECIMAL". This option will divide the original values by 100 and consequently display the numbers in decimals (ex 0.127))

## Filling the field SHOW DATES

In cases where you have defined a function that brings values for a date range, a column with the dates will appear.

In some situations you may prefer to omit this column of dates. For example when you want to place multiple columns side-by-side (Example: closing quote, P/L, volatility, etc.) it will be more convenient that the first function on the left shows your date column and the other functions omit the dates.

To omit the date column, fill in this field with "FALSE".

## Filling the field SHOW HEADER

The Header is the description that appears in the top cell.

Example: "Return in 1 year", "Earnings of 3 months", etc.

In the functions of a single ticker and a single date the header does not appear (by default). The header however appears (by default) in the two situations described below:

- When you set a function for multiple tickers;
- When you set a function that brings a range of dates;

In some situations you may prefer to omit the header. For example when you are embedding Economatica data into a report that already has a defined design.

To omit the header, fill in this field with "FALSE".

## Filling the field CUSTOMIZED HEADER

Use this field to choose a header different from the default used by the system. Enter the desired header in this field.

## Filling the field OPTIONALS

Through the "Optionals" field you can define other miscellaneous settings. The syntax of this field is complex. Please contact our support team for instructions on how to create the syntax for this field.

Examples:

1) Prices for past dates are shown by default adjusted for corporate actions. If, however, the Optionals field is filled in as shown below, prices for past dates will be shown without corporate actions adjustments:

- AdjustByCorporateActions=Yes (default)
- AdjustByCorporateActions=No
- AdjustByCorporateActions=YesExceptForCashDividends

2) The attribute "Index composition" (the weight that an asset has in the composition of an index) is one that always requires the Optionals field to be filled, since this field determines what is the desired index. The example shows the situation where the desired index is the Ibovespa (code = IBOV)

AmountInvestedBy = IBOV

3) The attribute "Value invested" (the amount invested by a fund in a given asset) is one that always requires the Optionals field to be filled, since this field determines the parameters of the invested asset.

Example 3A : Filling in the Optionals field to obtain the value invested in shares (Asset Class = STOCKS) of Microsoft (MSFT)

	A	B	C	D	E	F
1	amountinvestedin=MSFT		A2)			
2	assetclass=STOCKS					
3						
4						
5						
6						
7						
8						
9						
10						

ECONOMATICA

Multiplier

Show Dates

Show Header

Customized Header

Optionals

Example 3B : Filling in the Optionals field to obtain the value invested in other funds of the same Fund Manager

AmountInvestedInFundsOfTheSame = Fund manager

## Function ECODATASET (returns a data table)

The ECODATASET function returns one of the two types of data below:

- The composition of the investment portfolio of a Fund or of a Hypothetical Portfolio on several dates (on hypothetical portfolios see chapter Ecoportfolio)
- The list of corporate actions (dividends, stock dividends, interest, etc.) paid by a security

The following are instructions on how to complete each field of the ECODATASET function in order to obtain the desired data.

## Filling in the field TICKER

In the "Ticker" field you must enter the code of the security whose information you're looking for.

For non-listed securities (mutual funds, etc.) insert the same code used in the proprietary interface of the Economatica system

## Filling in the field DATA TYPE

Fill in this field with "PH" (portfolio holdings) to obtain the composition of the investment portfolio of a Fund or of a Hypothetical Portfolio on several dates

Fill this field with "CA" (corporate actions) to obtain the list of corporate actions (dividends, stock dividends, interest, etc.) paid by a security

## Showing the composition of an investment portfolio (data type=PH)

### Filling in the field RANGE END DATE

Use this field to define the end date for the desired date range. The options are :

- yyyy/mm/dd
- Latest : The end of the date range will be the date for which the most recent information is available
- Last Fully Disclosed : The end of the date range will be the date for which the most recent "open" holdings are available, in other words, the most recent holdings for portfolios that do not have "Undisclosed securities".

### Filling in the field RANGE START DATE

Use this field to define the start date for the desired date range. The options are :

- yyyy/mm/dd
- 6m (meaning 6 months before the date set in the field Range End Date), 3m, 2y, 5y, etc.

### Filling in the field CURRENCY

Use this field to convert the data into other currencies.

For investment fund holdings (Data Type=PH in which the percentage weight of each asset is being presented and not its financial value) :

- This field should not be filled in. Setting the currency will have no effect on percentage weights.

For investment fund holdings (Data Type=PH in which the financial value of each asset is being presented and not its percentage weight): The financial value of each asset will be converted to the specified currency. The options are:

- USD

- EUR
- Inflation adjusted

## Filling in the field MULTIPLIER

Through this field you can choose the unit in which the data will be presented (thousands, etc.).

For investment fund holdings (Data Type=PH in which the percentage weight of each asset is being presented and not its financial value): The percentage value of each asset will be converted according to the options below:

- Leave the field empty: the percentage weights of each asset will be displayed (Ex 12.7)
- Decimal: the same values will be shown but divided by 100 (Ex 0.127). This feature is useful to allow the user to format cells in Excel according to their preference (add "%" symbol, etc.)

For investment fund holdings (Data Type=PH in which the financial value of each asset is being presented and not its percentage weight): The financial value of each asset will be converted to the chosen unit. The options are:

- Units (no multiplier)
- Thousands
- Million
- Billions

## Filling in the field OPTIONALS

Through the OPTIONALS field you can specify other settings in addition to those listed above. The syntax for filling in this field can be complex. Contact our support for any assistance.

## Examples

Examples of filling in this field for investment fund holdings (Data Type=PH) :

presentation = \$ : The financial values of each asset will be presented (not its percentage weight, which is the default alternative)

consolidate = yes : If the fund has investments in shares of other funds, all funds invested will be "open" and all assets will be consolidated.

interval=D (ou W, M, Q, Y) : By default, the Ecodataset function displays the portfolio composition at the end of each month. By filling in the Optionals field as described , the portfolio composition will be presented day-by-day (or in the period chosen by the user). This feature is useful for Hypothetical Portfolios (portfolios created by the user through the Ecoportfolio function) and for the composition of certain indices. This feature is not useful for fund holdings since for most funds the information is only available at the end of the month.

## Show the contribution of each asset to the return of a Hypothetical Portfolio

This alternative for filling the Optionals field can be used exclusively for Hypothetical Portfolios (portfolios created by the user through the Ecoportfolio function), that is, it cannot be used for investment funds portfolios or Indices portfolios

"Contribution" is how much each asset in the portfolio contributed to the portfolio's total return over a given period. This depends on the return of the asset in that period as well as the weight of that asset in the portfolio.

In the example below, the portfolio return in the period of one month (ending on 08/31/2020) was 1.07% and each of the assets contributed with the values shown in the table. Note that the sum of contributions is equal to the total portfolio return

	A	B	C
1			
2		31/08/2020	
3	MSFT	-0,34	
4	AAPL	1,09	
5	AMZN	0,36	
6	FB	-0,03	
7	total	1,07	
8			

Using the command described below it is possible to show the contribution of each asset to the total return of a Hypothetical Portfolio (portfolios created by the user through the Ecoportfolio function) within a period chosen by the user.

To achieve that, the Optionals field must be filled with the two commands below (separated by semicolons):

```
presentation=contribution;contributionperiod=1m
```

In the example above the chosen period was one month but all the options below can be used:

- 1m, 1d, 21d, 52w, 5y, etc
- YTD (year to date), QTD, MTD, WTD
- from start (from the price series beginning)
- yyyy-mm-dd (from a specific date)

## Showing the list of corporate actions paid by a security (data type = CA)

### Filling in the field RANGE END DATE

Use this field to define the end date for the desired date range. The options are :

- yyyy/mm/dd

### Filling in the field RANGE START DATE

Use this field to define the start date for the desired date range. The options are :

- yyyy/mm/dd

### Filling in the field CURRENCY

Use this field to convert the data into other currencies. The amount of dividends and other corporate actions paid will be converted to the specified currency. The options are:

- USD
- EUR
- Inflation adjusted

## Filling in the field MULTIPLIER

For corporate actions (Data Type=CA) this field must not be filled out. It does not make sense to change the unit in which corporate actions are presented

# Function ECOSECURITIES (returns a list of securities)

## Introduction

Use the function ECOSECURITIES to define filters to get a list of certain securities.

Examples: the list of the stocks traded in the NASDAQ Stock Exchange, the list of the funds in Brazil, etc.

The list will consist of the securities codes and their respective exchange/source (according to their ISO codes).

Example:

- AAPL<XNAS>
- MSFT<XNAS>
- AMZN<XNAS>
- AMXL<XMEX>
- COPEC<XSGO>
- VALE3<XBSP>
- ITUB4<XBSP>

As new securities are regularly added to the database (shares issuances, etc), each time that the function ECOSECURITIES is updated/processed may result in changes to the list.

Below are the instructions on filling each field (filter) of the function ECOSECURITIES to obtain the desired security list.

Not all the fields (filters) need to be filled. You should fill only the fields that are necessary and sufficient to define the desired security list.

## Filling the field TYPE OF ASSET

This field is used to indicate which type(s) of asset represents the list you're interested in. The options are:

- "STOCK"
- "FUND"
- "ETF"
- "CORPORATEBOND"
- "GOVERNMENTBOND"
- "ADR"

- "COMMODITY"
- "CURRENCY"
- "STOCKINDEX"
- "INFLATION"
- "FIXEDINCOMEINDEX"
- and others

## Filling the field ACTIVE/CANCELED

Choose whether you want securities that are still actively traded or securities that are no longer traded. The options are: "ACTIVE" and "CANCELED"

## Filling the field SINGLE ENTRY

Companies that issue multiple asset classes (different share classes, etc) will show repeatedly on the list (per each asset class). Fill this field with "TRUE" so that each company shows up only once on the list, represented by its most liquid asset class.

## Filling the field COUNTRY

Indicate the country of origin for the companies whose securities you're interested in. The options are: "USA", "ARG", "BRA", "CHL", "COL", "MEX", "PER" and others

## Filling the field EXCHANGE

Indicate the stock exchange where the securities you're interested in are traded. The options are the exchange identifiers according to their ISO codes:

- "XNYS" (New York Stock Exchange)
- "XNAS" (NASDAQ)
- "XBUE" (Buenos Aires Stock Exchange)
- "XBSP" (Sao Paulo Stock Exchange)
- "XSGO" (Santiago Stock Exchange)
- "XBOG" (Bogota Stock Exchange)
- "XMEX" (Mexican Stock Exchange)
- "XLIM" (Lima Stock Exchange)
- and others

## Filling the field SHOW HEADER

The cell on top of the list of securities will be filled with the header "Ticker"

In certain cases you might prefer to omit the header. For example if you're adding Economatica data to an existing report with a specific design.

To omit the header fill in this field with "FALSE".

## Filling the field CUSTOMIZED HEADER

Through this field you can choose a different header from the system's default. Type in your own header in this field.

## Filling the field OPTIONALS

### Introduction

Through this field you can specify filters using other variables than those discussed above. Below are brief explanations, you may contact Economatica support for more detailed information.

**Example 1)** Select the stocks of companies in the construction sector (according to the sector classification Economatica):

```
"Sector Economatica=Construction"
```

**Example 2)** Select the stocks of companies in the construction sector or in the telecommunications sector (the two sectors should be separated by comma)

```
"Sector Economatica=Construction,Telecommunication"
```

**Example 3 - Problem caused by comma in the text)** In certain cases the right side of the equation could contain a comma. For example, there is a sector category called "Exploration, refining and distribution"

This text contains a comma between "exploration" and "refining". This comma will make the system think these are two separate categories. One being "Exploration" and the other "refining and distribution"

To solve this issue you have to insert the backslash ("\") before the comma

```
Segment Bovespa = Exploration\, refining and distribution
```

**Example 4)** Select funds whose Ambima classification is Multimercados balanceados:

```
"Ambima classification=Multimercados balanceados"
```

**Example 5)** Select funds whose Ambima classification is Multimercados balanceados AND whose fund manager is JP Morgan

To insert two or more filters it's necessary to abide by the following syntax:

- All the field content must be between braces
- Each filter must be in quotes
- The filters themselves must be separated by semicolon



```
{"Anbima classification=Multimercados balanceados";"Fund manager=JP Morgan"}
```

## Other operators for OPTIONALS field

The filters for OPTIONALS support other operators in addition to "equal to" (=) and "not equal to" (<>)

**Example 1)** Company name CONTAINS the word "Health"

```
"name~health"
```

**Example 2)** Company name DOES NOT CONTAIN the word "Health"

```
"name!~health"
```

**Example 3)** The share's ISIN code is available, ie. the ISIN field IS NOT NULL

```
"ISIN<>null"
```

## Filtering by configurable variables

It is possible to make filters using variables that are configurable. For example, it is possible to filter shares of companies whose Total Asset is greater than 10,000,000,000

```
"Total assets>10000000000"
```

When performing the above filter the system will take the default values attributed to the Total Assets, that is, the value from the company's most recent financial statement [DATE = LATEST] and its value will be expressed in the currency in which the statement was originally published [CURRENCY = ORIGINAL CURRENCY].

You can however change these parameters as explained below

**Example 1)** Get the value of Total Assets from the 12/31/2018 statement

```
Total Assets[DATE=2018-12-31]>10000000000
```

**Example 2)** Get the value of Total Assets in Euros

```
Total Assets[CURRENCY=EUR]>10000000000
```

**Example 3)** Get the value of Total Assets from the 12/31/2018 statement And in Euros

```
Total Assets[DATE=2018-12-31,CURRENCY=EUR]>10000000000
```

## It is recommended to place the filters in separate cells

If you use complex filters, we advise to place them in separate cells so that it will be possible to view the filters more clearly and avoid errors

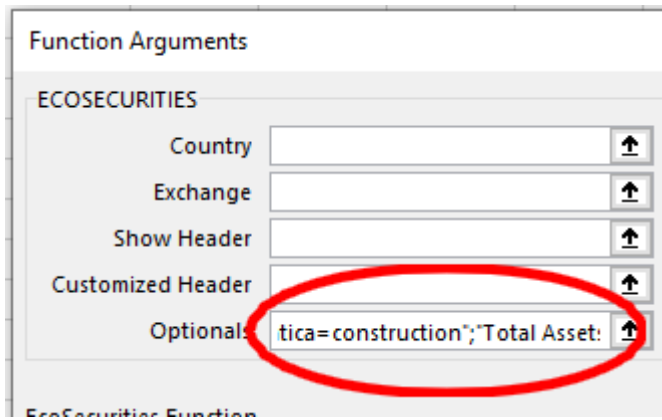
Suppose you want to filter the shares of companies that meet the following filters:

Sector (Economatica Classification) =Construction

Total Assets in 2018-12-31 > 10.000.000.000

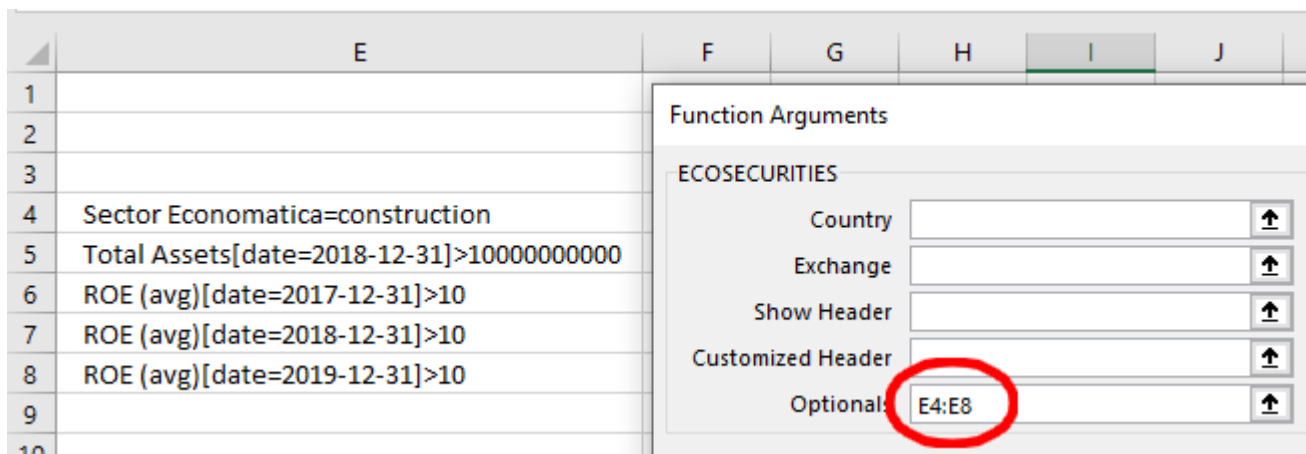
ROE > 10 in 2017, 2018 and 2019

If you do not place these filters in separate cells you will have a convoluted situation as shown below



However, when placing the filters in the selected cells, as the image below demonstrates, you'll have a more organized and less error-prone situation.

Filters must be placed in adjacent cells (vertically or horizontally)



## Function ECOPORTFOLIO (used to add holdings to create a portfolio)

### Introduction

Via the ECOPORTFOLIO function you can define the composition of a portfolio containing any asset that is available in the Economatrica database: stocks, ETFs, funds, etc. (depends on the database you contracted)

After inserting the composition of the portfolio using the ECOPORTFOLIO function, you will use the function ECONOMATICA to obtain data such as:

- historical series of the share value of this portfolio
- portfolio annual return
- portfolio volatility
- graph the evolution of the portfolio's value
- compare the performance of the portfolio with the performance of a benchmark
- etc

To obtain data based on a Portfolio you must place the Ecoportfolio function as a "Ticker" in the Economatrica function.

In the example below we have an Economatrica function showing the YTD Return of a list of assets and the asset that is in the cell A6 (My Investments) is a portfolio created using the Ecoportfolio function

	A	B	C	D	E	F	G
1							
2							
3		Return YTD					
4	MSFT	9,5					
5	AAPL	-5,5					
6	My investments	-0,4					
7	AMZN	-2,9					
8							

There are two different types of portfolios. The difference between them is the type of information used to define the portfolio. You must choose the type that is compatible with the information you have about the holdings. The two types are:

- Percentage Portfolio: inform the percentage weights of each asset on one (or more) date
- Financial Portfolio: inform each buy and sale transaction

## Percentage Portfolio Features

To define a Percentage portfolio, the user must inform the percentage weights of each asset on a certain date, following the format of the example below

Do not use the “%” symbol

	A	B	C	D
1				
2				
3			31-03-18	
4		AAPL	25	
5		TSLA	25	
6		AMZN	40	
7		MSFT	10	
8				

It is also possible to inform the percentage weights of each asset on more than one date

	A	B	C	D	E	F
1						
2						
3			31-03-18	20-05-18	19-02-20	
4		AAPL	25	20	30	
5		TSLA	25	0	0	
6		AMZN	40	20	15	
7		MSFT	10	60	55	
8						
9						

The historical NAV series of this portfolio will be created.

The initial NAV value will be 100

Its start date will coincide with the beginning of the historical series of the youngest holding in the portfolio, that is, whose historical series has started more recently.

Example: If one of the holdings of the portfolio is a stock whose trading started just 20 days ago, then the NAV series of the portfolio will also start 20 days ago

When the user provides the weights for only one date, the composition of that date will be a reference for previous dates (from the beginning) and will be a reference for later dates (until today)

When the user informs the weights for more than one date, each composition defined will be a reference for the subsequent dates until the next defined composition (or until today in case it is the last composition defined by the user). The first user-defined composition will also be a reference to previous dates (from the beginning).

For Percentage Portfolios (not applicable to Financial Portfolios) the user will be able to choose between rebalancing or not rebalancing the composition. See details in the chapter "Filling in the field REBALANCE"

## Financial Portfolio Characteristics

To build a Financial portfolio, the user must inform the buy and sale transactions according to the format of the example below.

	A	B	C	D
1				
2				
3				
4	25-06-19	AAPL	5000	
5	05-07-19	TSLA	2000	
6	13-07-19	AAPL	-1500	
7	08-08-19	MSFT	4200	
8	01-02-20	NVDA	1700	
9	26-02-20	AMD	2100	
10	05-03-20	FB	6000	
11	05-03-20	GOOGL	-3800	
12				
13				

The historical NAV series of the portfolio will be created.

Its start date will coincide with the date of the first transaction

The initial NAV value will be 100

In the Financial portfolio (not applicable to the Percentage portfolio) in addition to the NAV series, the series of portfolio asset values will also be created.

## Sell all of a given security

The resource explained below is useful when you want to sell all of a certain security, that is, "zero" the position of that security in the portfolio.

To carry out this task, we face the difficulty of knowing the exact value of the investment in that security on the date we want to "zero out." The total value of the investment in this security depends on the security's transactions (buys and sales) carried out in the past, as well as its valuation in the period.

To "zero" the position it is necessary to know the exact value with a precision of several decimal places.

The most practical solution to this problem is to create a transaction and fill the "value" field with "sell all" (instead of filling it with a financial value).

The example below shows a portfolio in which the AAPL position was "zeroed out" on 7/3/20

	A	B	C
1			
2			
3			
4	25/06/2019	AAPL	5000
5	05/07/2019	TSLA	2000
6	13/07/2019	AAPL	-1500
7	08/08/2019	MSFT	4200
8	01/02/2020	NVDA	1700
9	26/02/2020	AMD	2100
10	05/03/2020	FB	6000
11	05/03/2020	GOOGL	-3800
12	07/03/2020	AAPL	sell all
13	15/03/2020	AMZN	5600
14			

The following are guidelines on how to complete each field of the ECOPORTFOLIO function

### Filling in the field TYPE OF PORTFOLIO

This field must be filled with P or F if you want a Percentage portfolio or a Financial portfolio respectively. See explanations of this subject above in this chapter.

### Filling in the field COMPOSITION / TRANSACTIONS

In this field you must indicate the cell range where you previously entered the weights or transactions of the portfolio.

To build a Percentage portfolio, as explained previously, you must inform the percentage weights of each holding on one (or more) date following the format shown in the image below. In the case of the example below, this field should be filled with B3: E7

Do not use the “%” symbol

	A	B	C	D	E	F
1						
2						
3			31-03-18	20-05-18	19-02-20	
4		AAPL	25	20	30	
5		TSLA	25	0	0	
6		AMZN	40	20	15	
7		MSFT	10	60	55	
8						
9						

To build a Financial portfolio, as explained above, you must inform the buy and sale transactions in the format shown in the image below. In the case of the example below, this field should be filled with A4: C11

	A	B	C	D
1				
2				
3				
4	25-06-19	AAPL	5000	
5	05-07-19	TSLA	2000	
6	13-07-19	AAPL	-1500	
7	08-08-19	MSFT	4200	
8	01-02-20	NVDA	1700	
9	26-02-20	AMD	2100	
10	05-03-20	FB	6000	
11	05-03-20	GOOGL	-3800	
12				
13				

## Filling in the field TOLERANCE

If any holding in the portfolio does not have a price on one or more dates, enter the maximum period that the previous price for that holding should be repeated. Ex : 5d, 1m, etc

If even after considering the tolerance chosen by the user, any component still has dates without prices, then the portfolio will not be accounted on those dates.

## Filling in the field REBALANCE



This field should only be filled in for Percentage portfolios (does not apply to Financial portfolios).

The options are N (no) and Y (yes). If this field is left blank, option N

N : Don't-Rebalance. On the dates after (\*) the composition informed by the user, the composition of the portfolio will show changes in relation to the initial weights. These changes are caused by the fact that the portfolio holdings have different valuations over time

Y : Rebalance. On the dates after (\*) the composition informed by the user, the composition of the portfolio will remain unchanged in relation to the initial weights. The composition will remain unchanged (despite the fact that the portfolio holdings have different valuations over time) because the system will create a scenario equivalent to executing daily buy and sale operations necessary to keep the initial weights unchanged.

(\*) It will also be valid for previous dates if that composition is the only one (or the first of several) informed by the user

## Filling in the field NAME

Fill in this field with the name you want to assign to the portfolio

## Maximum Portfolio Size

There is a limit on the size of the portfolio

In the case of the Percentage Portfolio there is a limit to the number of cells in the matrix, that is, there is a limit to the combination of the number of assets (rows) and the number of dates on which the composition was informed (columns)

In the case of the Financial Portfolio, there is a limit to the number of transactions reported

It is not possible to set a fixed limit size because the limit depends on the content of each cell

Example : If each cell is filled with two decimal places (ex 32.96) the limit number of cells in the matrix will be greater than if the cells are filled with four decimal places (Ex 32.9655)

That is, the maximum size will depend on how you fill each cell

For reference only, the maximum size for a Percentage Portfolio with cells filled to 2 decimal places (Ex 32.96) is approximately 4500 cells. This corresponds, for example, to a portfolio with 45 assets (lines) and composition informed on 100 dates (columns)

## Function ECOBENCHMARK (used to create a benchmark)

### Introduction

Via the ECOBENCHMARK function you can create a benchmark based on any security available in the Economatica database (depends on the database you contracted)

A price series will be created for this benchmark so that your returns are equal to the returns of the base security but amplified by a factor chosen by the user

Ex: S&P 500 + 6%, CPI-U + 4%, 110% of T-Bond, etc

This amplification of the returns on the base security can be done by adding a factor (S&P500 + 6%) or by multiplying by a factor (110% of the T-bond)

Example of the calculations involved in the creation of a benchmark that adds a factor: Consider a year in which the variation in the base security has been 5%. If the user chooses a factor of 6, the benchmark variation will be 11.3% this year:

$$11.3\% = (1.05 * 1.06 - 1) * 100$$

Example of the calculations involved in the creation of a benchmark that multiplies by a factor: Consider a day when the change in the base security has been 0.02%. If the user chooses a factor equal to 110, the variation of the benchmark will be 0.022% on this day:

$$0.022\% = 0.02\% * 1.1$$

NOTE: The price series of the benchmark is constructed in such a way that the DAILY variations of the benchmark are, in this example, 110% of the DAILY variations of the base security. A mathematical consequence of this is that the ANNUAL variations of the benchmark will only be approximately equal (and not exactly equal) to 110% of the ANNUAL variations of the base security.

The start date of the benchmark series will coincide with the start date of the series of the base security.

On the final date the value of the benchmark series will be 100

The following are guidelines on how to complete each field of the ECOBENCHMARK function

## Filling in the field SECURITY

Enter in this field the code (as used in the Economatica system) to be used as the base security for the benchmark. Ex: "CPI-U", "S&P 500", etc.

## Filling in the field TYPE OF OPERATION

Fill this field with "A" to add a factor (Ex: S&P 500 + 6%) and "M" to multiply by a factor (Ex: 110% of T-bond). See explanations of this subject above in this chapter.

## Filling in the field FACTOR

In this field you must enter the value of the factor. Ex: 5, 110. Do not use the "%" symbol

## Filling in the field NAME

Enter the name you wish to assign to the benchmark

## Create functions directly in an Excel cell

As we know, Excel lets you type a function in the cell itself without opening the function edit screen. To do so, you must follow the syntax below and include the fields in the same order as they are shown in the function edit screen.

- = economatica("ticker", "attribute", attribute's period", "date", "range start date", "interval", "currency", "multiplier", "show dates", "show header", "customized header", "optionals")
- = ecosecurities("type of asset", "active/canceled", "single entry", "country", "exchange", "show header", "customized header", "optionals")
- the same to all the other functions

The examples above present the case where all fields are used. Most cases however will use only a few fields.

Even if one or more fields are not used, it's necessary to maintain the proper syntax order as indicated above. Therefore, you must leave a blank space in the fields not used. Notice in the examples below how two consecutive commas (with no content in between) are found in the place of the unused fields.

The permitted values for each field are those detailed earlier in this document.

The fields must be separated by the character that your Windows uses as "List Separator". If you do not know which character your Windows uses as the list separator, you can use the following rule as a guide (this rule is not valid if you have changed your Windows default settings) : Fields must be separated with a comma when Excel uses the dot as the decimal separator. While the fields must be separated by semicolons when Excel uses the comma as the decimal separator. In the following examples the fields are separated by commas:

**Example 1 - Function ECONOMATICA** Display Microsoft's Industry Sector (MSFT) according to the NAICS classification. In this case only the first two fields will be used.

= economatica ("msft", "sector naics")

**Example 2 - Function ECONOMATICA** Show Google's (GOOG) closing price on April 5, 2018. In the case of the closing price the attribute's period field is not used, so an empty space must be left in the reserved position for this field (this is the empty space that is between two commas).

= economatica ("goog", "close", , "2018-04-05")

**Example 3 - Function ECONOMATICA** Show Microsoft's stock (MSFT) return from the beginning of the year to the most recent date.

= economatica ("msft", "return", "YTD", "d-0")

**Example 4 - Function ECONOMATICA** Show Google's (GOOG) net earnings in each quarter in the last 4 years (this will be 16 quarters) to the last available, on a quarterly date scale and converted to Euros.

= economatica ("goog", "net income", "3m", "latest", "4y", "q", "eur")

**Example 5 - Function ECONOMATICA** Show the maximum price from the last 52 weeks for a list of 20 tickers (which you previously placed between cells A5 and A24). Show inflation-adjusted data. Omit the header. In this example the fields "range start date", "interval", "multiplier" and "show dates" will not be filled so you must leave empty spaces in the reserved positions for each of these fields.

= economatica (A5: A24, "high", "52w", "d-0" ,,, "inflation adjusted",,, "false")

**Example 6 - Function ECOSECURITIES** Select all the stocks traded in the NASDAQ exchange and that are currently active (in other words, exclude those cancelled)

=ecosecurities("stock", "active", ,,, "xnas")

**Example 7 - Function ECOSECURITIES** Select all the government securities issued by Brazil that are currently active (in other words, exclude those cancelled)

```
=ecosecurities("governmentbond", "active", "bra")
```

**Example 8 - Function ECOSECURITIES** Select the stocks of the companies whose sector is construction (using the Economatica classification).

```
=ecosecurities("stock",,,,,, "sector economatica=construction")
```

**Example 9 - Function ECOSECURITIES** Select funds from Brazil

```
=ecosecurities("fund",,, "bra")
```

**Example 10 - Function ECOSECURITIES** Select funds from Brazil and Mexico (the two countries should be separated by commas)

```
=ecosecurities("fund",,, "bra,mex")
```

**Example 11 - Function ECOSECURITIES** Select funds from Brazil whose Anbima classification is Multimercados balanceados and whose fund manager is JP Morgan

```
=ecosecurities("fund",,, "bra",,,"Anbima classification=Multimercados balanceados";"Fund manager=JP Morgan")
```

## Create functions by copying a screen of the Economatica system

The alternative below is only available for the ECONOMATICA function (not available for the ECOSECURITIES function or others).

It's possible to create a function ECONOMATICA in Excel by copying from a screen in the Economatica system (proprietary interface) and pasting into Excel.

Initially you should open the Economatica system, that is, access the proprietary interface of the Economatica system. Please contact our support if you do not know how to operate the proprietary interface of the Economatica system.

Once in the Economatica system you should open the Screening window or the Matrixx window and create columns containing the data you want to have in Excel.

Then you have to highlight the desired data, right click on the highlighted area and choose the option "Export to Excel add in".

Name	Class	Ticker	Close 22Nov17 adj by CA's orig currency	Volume\$ 22Nov17 in this Day orig currency in thousands	Volatility yearly basis 22Nov17 1 years orig currency
<input type="checkbox"/> 3526 Westinghouse Air Brak...	Com	WAB			
<input type="checkbox"/> 3527 Westlake Chemical Corp	Com	WLK			
<input type="checkbox"/> 3528 Westmoreland Coal Co	Com	WLB			
<input type="checkbox"/> 3529 Westrock Co	Com	WRK			
<input type="checkbox"/> 3530 Westwater Resources, L...	Com	WWR			
<input type="checkbox"/> 3531 Westwood Hldg Group I...	Com	WHG			
<input type="checkbox"/> 3532 Wex Inc	Com	WEX			
<input type="checkbox"/> 3533 Weyco Group Inc	Com	WEYS			
<input type="checkbox"/> 3534 Weyerhaeuser Co	Com	WY			
<input type="checkbox"/> 3535 Wheeler Real Estate Inv...	Com	WHLR			
<input type="checkbox"/> 3536 Whirlpool Corp	Com	WHR			
<input type="checkbox"/> 3537 White Mountains Insura...	Com	WTM			
<input type="checkbox"/> 3538 Whitestone Reit	Com	WSR			
<input type="checkbox"/> 3539 Whiting Petroleum Corp	Com	WLL			
<input type="checkbox"/> 3540 Wideopenwest, Inc	Com	WOW			
<input type="checkbox"/> 3541 Widepoint Corp	Com	WYY			
<input type="checkbox"/> 3542 Wildhorse Resource D...	Com	WRD			
<input type="checkbox"/> 3543 Wiley John & Sons, Inc	Com A	JWA			
<input type="checkbox"/> 3544 Wiley John & Sons, Inc	Com B	JWB			
<input type="checkbox"/> 3545 Wilhelmina Intl, Inc	Com	WHLM	6.50	2	-
<input type="checkbox"/> 3546 Willamette Valley Vinev...	Com	WVVI	8.40	35	14.12

- modify parameters for this column
- repeat this column with different parameters
- insert column to the left
- delete column
- hide column
- sort ascending
- sort descending
- filter by this column
- group by this column
- mark selected items
- export to Excel add-in

Then paste this content into your Excel using CTRL + V.

When doing this you will be pasting in Excel not the data itself but the functions that will allow your Excel to communicate with the Economatica servers and fill the cells with the desired data.

After doing this operation (and saving your Excel spreadsheet) you will no longer need to use the proprietary interface of the Economatica system.

## Proxy Configuration

Certain proxy configurations may prevent access to the Economatica Excel Add-in.

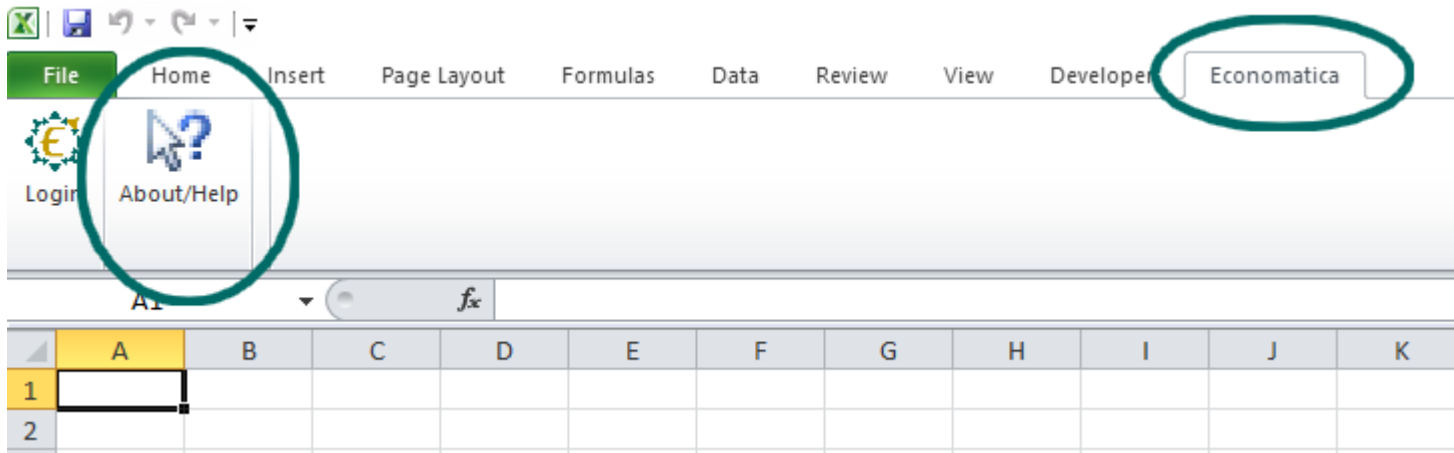
In these cases you will receive the message: "The server returned an error: (407) Proxy Authentication" (the exact text message may vary depending upon your environment).

To correct this problem you must use one of the following 2 options :

**Option 1)** Ask your IT department to unblock access to the following address:

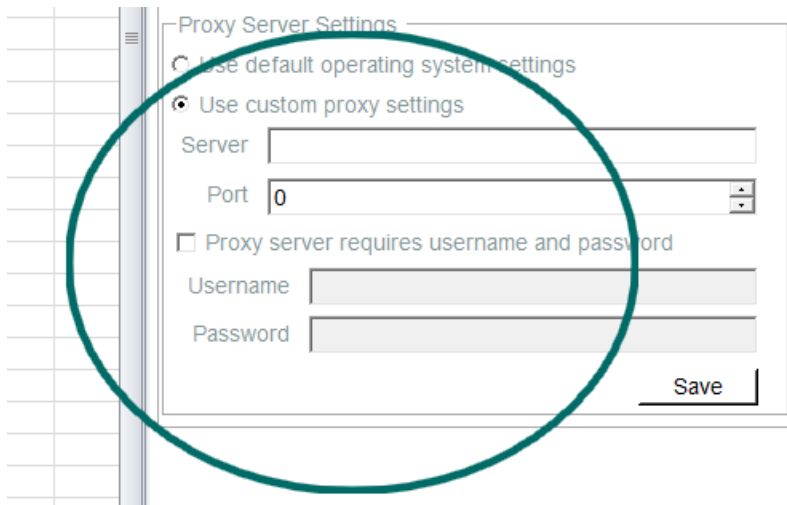
- Host: [api.overstat.economatica.com](https://api.overstat.economatica.com)
- Port: 443
- Protocol: https

**Option 2)** Enter the configuration settings of the proxy into a specific window found in the Economatica Excel Add-in. To access this window click on the icon "About / Help" shown below.



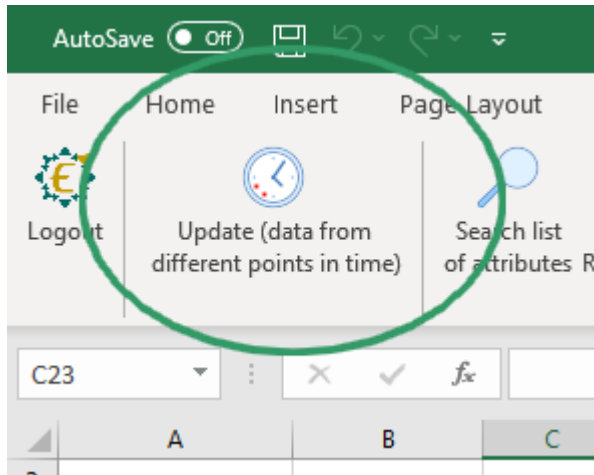
The configuration window will appear on the right-side of the screen. Complete the fields indicated in the image below. Ask your IT for the specific settings that are required.

Attention: The Economatica Excel Add-in does not currently support automatic proxy script.



# Update status of your spreadsheet data

The icon below may appear on your spreadsheet toolbar



The displaying of this icon does not necessarily indicate a problem. See below the description of its meaning.

Economica's server is constantly being updated with new data. In addition to daily quotes, huge amounts of information is entered into the database: new company balance sheets, new fund portfolio holdings, master data, historical data corrections, etc.

Approximately every 5 minutes (this interval may vary greatly) the server is loaded with new data. That is, approximately every 5 minutes the server database instance changes.

This icon indicates that some cells in your spreadsheet were updated at a certain time while new functions you created later were updated at a time when the server had already been fed with new information and therefore the database was in a new instance.

This icon may also appear if your spreadsheet is very large and all functions are slow to update and a server update occurs while your spreadsheet is still refreshing.

This is RARELY a problem since it is very unlikely that there will be any conflict between your spreadsheet data caused by the fact that different cells are reflecting different database instances.

However, clicking on this icon will update all functions in your spreadsheet and will be synchronized with the same moment as the principal server database.