

# Package ‘tidyBdE’

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**Title** Download Data from Bank of Spain

**Version** 0.2.2

**Description** Tools to download data series from 'Banco de España' ('BdE') on 'tibble' format. 'Banco de España' is the national central bank and, within the framework of the Single Supervisory Mechanism ('SSM'), the supervisor of the Spanish banking system along with the European Central Bank. This package is in no way sponsored endorsed or administered by 'Banco de España'.

**License** GPL (>= 3)

**URL** <https://ropenspain.github.io/tidyBdE/>,  
<https://github.com/rOpenSpain/tidyBdE>

**BugReports** <https://github.com/rOpenSpain/tidyBdE/issues>

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---

bde_catalog_load	<i>Load BdE catalogs</i>
------------------	--------------------------

---

### Description

Load the time-series catalogs provided by BdE.

### Usage

```
bde_catalog_load(
  catalog = "ALL",
  parse_dates = TRUE,
  cache_dir = NULL,
  update_cache = FALSE,
  verbose = FALSE
)
```

### Arguments

catalog	A single value indicating the catalogs to be updated or "ALL" as a shorthand. See <b>Details</b> .
parse_dates	Logical. If TRUE the dates would be parsed using <a href="#">bde_parse_dates()</a> .
cache_dir	A path to a cache directory. The directory can also be set via options with <code>options(bde_cache_dir = "path/to/dir")</code> .
update_cache	Logical. If TRUE the requested file would be updated on the cache_dir.
verbose	Logical TRUE or FALSE, display information useful for debugging.

**Details**

Accepted values for catalog are:

<b>CODE</b>	<b>PUBLICATION</b>	<b>UPDATE FREQUENCY</b>	<b>FREQUENCY</b>
<b>BE</b>	Statistical Bulletin	Daily	Monthly
<b>CF</b>	Financial Accounts of the Spanish Economy	Quarterly	Annual
<b>IE</b> (see <b>Note</b> )	Economic Indicators	Daily	Monthly
<b>SI</b>	Summary Indicators	Daily	Daily
<b>TC</b>	Exchange Rates	Daily	Daily
<b>TI</b>	Interest Rates	Daily	Daily
<b>PB</b>	Bank Lending Survey	Quarterly	Quarterly

Use "ALL" as a shorthand for updating all the catalogs at a glance.

If the requested catalog is not cached [bde\\_catalog\\_update\(\)](#) is invoked.

**Value**

A tibble

**Note**

From 1 July 2021, the contents of the publication Economic Indicators will gradually be migrated to the Statistical Bulletin. From June 2022, the Economic Indicators section will no longer be available.

**Source**

[Time-series bulk data download](#)

**See Also**

Other catalog: [bde\\_catalog\\_search\(\)](#), [bde\\_catalog\\_update\(\)](#)

**Examples**

```
bde_catalog_load("TI", verbose = TRUE)
```

---

bde\_catalog\_search      *Search BdE catalogs*

---

## Description

Search for keywords on the time-series catalogs.

## Usage

```
bde_catalog_search(pattern, ...)
```

## Arguments

pattern	<a href="#">regex</a> pattern to search See <b>Details</b> and <b>Examples</b> .
...	Arguments passed on to <a href="#">bde_catalog_load</a>
catalog	A single value indicating the catalogs to be updated or "ALL" as a shorthand. See <b>Details</b> .
parse_dates	Logical. If TRUE the dates would be parsed using <a href="#">bde_parse_dates()</a> .
update_cache	Logical. If TRUE the requested file would be updated on the cache_dir.
cache_dir	A path to a cache directory. The directory can also be set via options with <code>options(bde_cache_dir = "path/to/dir")</code> .
verbose	Logical TRUE or FALSE, display information useful for debugging.

## Details

**Note that** BdE files are only provided in Spanish, for the time being. Therefore search terms should be provided in Spanish as well in order to get search results.

This function uses [base::regex\(\)](#) function for finding matches on the catalogs. You can pass [regular expressions](#) to broaden the search.

## Value

A tibble with the results of the query.

## See Also

[bde\\_catalog\\_load\(\)](#), [base::regex\(\)](#)

Other catalog: [bde\\_catalog\\_load\(\)](#), [bde\\_catalog\\_update\(\)](#)

## Examples

```
# Simple search (needs to be in Spanish)
# !! PIB [es] == GDP [en]

bde_catalog_search("PIB")

# More complex - Single
bde_catalog_search("Francia(*)PIB")

# Even more complex - Double
bde_catalog_search("Francia(*)PIB|Italia(*)PIB|Alemania(*)PIB")

# Search a sequential code: Exact match
# Note that this series (sequential code) appears on several tables

bde_catalog_search("^3779313$")
```

---

bde\_catalog\_update      *Update BdE catalogs*

---

## Description

Update the time-series catalogs provided by BdE.

## Usage

```
bde_catalog_update(catalog = "ALL", cache_dir = NULL, verbose = FALSE)
```

## Arguments

catalog	A vector of characters indicating the catalogs to be updated or "ALL" as a shorthand. See <b>Details</b> .
cache_dir	A path to a cache directory. The directory can also be set via options with <code>options(bde_cache_dir = "path/to/dir")</code> .
verbose	Logical TRUE or FALSE, display information useful for debugging.

## Details

Accepted values for catalog are:

CODE	PUBLICATION	UPDATE FREQUENCY	FREQUENCY
BE	Statistical Bulletin	Daily	Monthly
CF	Financial Accounts of the Spanish Economy	Quarterly	Annual

IE	Economic Indicators	Daily	Monthly
SI	Summary Indicators	Daily	Daily
TC	Exchange Rates	Daily	Daily
TI	Interest Rates	Daily	Daily
PB	Bank Lending Survey	Quarterly	Quarterly

Use "ALL" as a shorthand for updating all the catalogs at a glance.

### Value

None Downloads the catalog file(s) to the local machine.

### Source

Time-series bulk data download

### See Also

Other catalog: [bde\\_catalog\\_load\(\)](#), [bde\\_catalog\\_search\(\)](#)

### Examples

```
bde_catalog_update("TI", verbose = TRUE)
```

---

bde\_check\_access      *Check access to BdE*

---

### Description

Check if R has access to resources at [https://www.bde.es/webbde/en/estadis/infoest/descarga\\_series\\_temporales.html](https://www.bde.es/webbde/en/estadis/infoest/descarga_series_temporales.html).

### Usage

```
bde_check_access()
```

### Value

a logical.

### See Also

Other utils: [bde\\_parse\\_dates\(\)](#)

## Examples

```
bde_check_access()
```

---

bde_indicators	<i>Relevant Indicators of Spain</i>
----------------	-------------------------------------

---

## Description

Set of helper functions for downloading some of the most relevant macroeconomic indicators of Spain.

## Usage

```
bde_ind_gdp_var(series_label = "GDP_YoY", ...)
bde_ind_unemployment_rate(series_label = "Unemployment_Rate", ...)
bde_ind_euribor_12m_monthly(series_label = "Euribor_12M_Monthly", ...)
bde_ind_euribor_12m_daily(series_label = "Euribor_12M_Daily", ...)
bde_ind_cpi_var(series_label = "Consumer_price_index_YoY", ...)
bde_ind_ibex(series_label = "IBEX_index_month", ...)
bde_ind_gdp_quarterly(series_label = "GDP_quarterly_value", ...)
bde_ind_population(series_label = "Population_Spain", ...)
```

## Arguments

series_label	Optional. Character vector or value. Allows to specify a custom label for the series extracted. It should have the same length than series_code.
...	Arguments passed on to <a href="#">bde_series_load</a>
parse_dates	Logical. If TRUE the dates would be parsed using <a href="#">bde_parse_dates()</a> .
parse_numeric	Logical. If TRUE the columns would be parsed to double (numeric) values. See <b>Note</b> .
cache_dir	A path to a cache directory. The directory can also be set via options with <code>options(bde_cache_dir = "path/to/dir")</code> .
update_cache	Logical. If TRUE the requested file would be updated on the cache_dir.
verbose	Logical TRUE or FALSE, display information useful for debugging.
extract_metadata	Logical TRUE/FALSE. On TRUE the output is the metadata of the requested series.

**Details**

This functions are convenient wrappers of `bde_series_load()` referencing specific series. Use `verbose = TRUE`, `extract_metadata = TRUE` options to see the specification and the source.

**Value**

A tibble with the required series.

**See Also**

[bde\\_series\\_load\(\)](#), [bde\\_catalog\\_search\(\)](#)

**Examples**

```
bde_ind_gdp_var()
```

---

bde\_pals

*BdE color palettes*

---

**Description**

Custom palettes based on the publications of BdE.

**Usage**

```
bde_vivid_pal(...)
```

```
bde_rose_pal(...)
```

**Arguments**

... Further arguments of the functions.

**Value**

A palette of colors.

**See Also**

Other bde\_plot: [scales\\_bde](#), [theme\\_bde\(\)](#)



**Examples**

```
# Bde vivid pal
scales::show_col(bde_vivid_pal()(6), labels = FALSE)

# Bde rose pal
scales::show_col(bde_rose_pal()(6), labels = FALSE)
```

---

bde_parse_dates	<i>Parse dates</i>
-----------------	--------------------

---

**Description**

This function is tailored for the date formatting used on this package, so it may fail if it is used for another datasets. See **Examples** for checking which formats would be considered.

**Date Formats:**

<b>FREQUENCY</b>	<b>FORMAT</b>
<b>Daily / Business day</b>	DD MMMMYYYY
<b>Monthly</b>	MMM YYYY
<b>Quarterly</b>	MMM YYYY, where MMM is the first or the last month of the quarter, depending on the value of its
<b>Half-yearly</b>	MMM YYYY, where MMM is the first or the last month of the halfyear period, depending on the valu
<b>Annual</b>	YYYY

**Usage**

```
bde_parse_dates(dates_to_parse)
```

**Arguments**

dates\_to\_parse Dates to parse

**Details**

Tries to parse strings representing dates using [as.Date\(\)](#)

**Value**

A class "Date" object.

**See Also**

[as.Date\(\)](#)

Other utils: [bde\\_check\\_access\(\)](#)

**Examples**

```

# Formats parsed
would_parse <- c(
  "02 FEB2019", "15 ABR 1890", "MAR 2020", "ENE2020",
  "2020", "12-1993", "01-02-2014", "01/02/1990"
)

parsed_ok <- bde_parse_dates(would_parse)

class(parsed_ok)

tibble::tibble(raw = would_parse, parsed = parsed_ok)

#-----

# Formats not admitted
wont_parse <- c("JAN2001", "2010-01-12", "01 APR 2017", "01/31/1990")

parsed_fail <- bde_parse_dates(wont_parse)

class(parsed_fail)

tibble::tibble(raw = wont_parse, parsed = parsed_fail)

```

---

bde\_series\_full\_load *Load BdE full time-series files*

---

**Description**

Load a full time-series file provided by BdE.

**Usage**

```

bde_series_full_load(
  series_csv,
  parse_dates = TRUE,
  parse_numeric = TRUE,
  cache_dir = NULL,
  update_cache = FALSE,
  verbose = FALSE,
  extract_metadata = FALSE
)

```

**Arguments**

series_csv	csv file of a series, as defined in the field Nombre del archivo con los valores de la serie of the corresponding catalog. See <a href="#">bde_catalog_load()</a> .
parse_dates	Logical. If TRUE the dates would be parsed using <a href="#">bde_parse_dates()</a> .

parse_numeric	Logical. If TRUE the columns would be parsed to double (numeric) values. See <b>Note</b> .
cache_dir	A path to a cache directory. The directory can also be set via options with <code>options(bde_cache_dir = "path/to/dir")</code> .
update_cache	Logical. If TRUE the requested file would be updated on the cache_dir.
verbose	Logical TRUE or FALSE, display information useful for debugging.
extract_metadata	Logical TRUE/FALSE. On TRUE the output is the metadata of the requested series.

## Details

### About BdE file naming:

The series name is a positional code showing the location of the table. For example, table **be\_6\_1** represents the Table 1, Chapter 6 of the Statistical Bulletin ("BE"). Although it is a unique value, it is subject to change (i.e. a new table is inserted before).

For that reason, the function `bde_series_load()` is more suitable for extracting specific time-series.

## Value

A tibble with a field "Date" and the alias of the fields series as described on the catalogs. See `bde_catalog_load()`.

## Note

This function tries to coerce the columns to numbers. For some series a warning may be displayed if the parser fails. You can override the default behavior with `parse_numeric = FALSE`

## See Also

Other series: `bde_series_load()`

## Examples

```
# Metadata
bde_series_full_load("TI_1_1.csv", extract_metadata = TRUE)

# Data
bde_series_full_load("TI_1_1.csv")
```

---

bde_series_load	<i>Load a single BdE time-series.</i>
-----------------	---------------------------------------

---

### Description

The series alias is a positional code showing the location (column and/or row) of the series in the table. However, although it is unique, it is not a good candidate to be used as the series ID, as it is subject to change. If a series changes position in the table, its alias will also change.

To ensure series can still be identified, even after these changes, they are assigned a sequential number (`series_code` on this function) which will remain unchanged throughout the series' lifetime.

Note that a single series could be used on different tables, so it can have several aliases. If you need to search by alias it is recommended to use `bde_series_full_load()`.

### Usage

```
bde_series_load(
  series_code,
  series_label = NULL,
  parse_dates = TRUE,
  parse_numeric = TRUE,
  cache_dir = NULL,
  update_cache = FALSE,
  verbose = FALSE,
  extract_metadata = FALSE
)
```

### Arguments

<code>series_code</code>	a numeric (or coercible with <code>base::as.double()</code> ) value or vector with time-series code(s), as defined in the field Número secuencial of the corresponding series. See <code>bde_catalog_load()</code> .
<code>series_label</code>	Optional. Character vector or value. Allows to specify a custom label for the series extracted. It should have the same length than <code>series_code</code> .
<code>parse_dates</code>	Logical. If TRUE the dates would be parsed using <code>bde_parse_dates()</code> .
<code>parse_numeric</code>	Logical. If TRUE the columns would be parsed to double (numeric) values. See <b>Note</b> .
<code>cache_dir</code>	A path to a cache directory. The directory can also be set via options with <code>options(bde_cache_dir = "path/to/dir")</code> .
<code>update_cache</code>	Logical. If TRUE the requested file would be updated on the <code>cache_dir</code> .
<code>verbose</code>	Logical TRUE or FALSE, display information useful for debugging.
<code>extract_metadata</code>	Logical TRUE/FALSE. On TRUE the output is the metadata of the requested series.

**Details**

Load a single time-series provided by BdE.

**Value**

A tibble with a field "Date" and the series\_code of the series as described on the catalogs. See [bde\\_catalog\\_load\(\)](#).

**Note**

This function tries to coerce the columns to numbers. For some series a warning may be displayed if the parser fails. You can override the default behavior with `parse_numeric = FALSE`

**See Also**

[bde\\_catalog\\_load\(\)](#), [bde\\_catalog\\_search\(\)](#), [bde\\_indicators\(\)](#)

Other series: [bde\\_series\\_full\\_load\(\)](#)

**Examples**

```
# Metadata
bde_series_load(573234, verbose = TRUE, extract_metadata = TRUE)

# Data
bde_series_load(573234, extract_metadata = FALSE)

# Vectorized
bde_series_load(c(573234, 573214),
  series_label = c("US/EUR", "GBP/EUR"),
  verbose = TRUE, extract_metadata = TRUE
)

bde_series_load(c(573234, 573214),
  series_label = c("US/EUR", "GBP/EUR"),
  verbose = TRUE, extract_metadata = FALSE
)
```

---

scales\_bde

*BdE scales for ggplot2.*

---

**Description**

Scales to be used with the ggplot2 package. Discrete palettes are named as `scale*_bde_d` while continuous palettes are named `scale*_bde_c`.

**Usage**

```
scale_color_bde_d(palette = "bde_vivid_pal", ...)
```

```
scale_fill_bde_d(palette = "bde_vivid_pal", ...)
```

```
scale_color_bde_c(palette = "bde_vivid_pal", ...)
```

```
scale_fill_bde_c(palette = "bde_vivid_pal", ...)
```

**Arguments**

`palette` Name of the BdE palette to apply. One of "bde\_vivid\_pal", "bde\_rose\_pal". See [bde\\_pals\(\)](#) for details.

`...` Further arguments of [ggplot2::discrete\\_scale\(\)](#) or [ggplot2::continuous\\_scale\(\)](#).

**Value**

A ggplot2 color scale.

**See Also**

[bde\\_vivid\\_pal\(\)](#), [ggplot2::discrete\\_scale\(\)](#), [ggplot2::continuous\\_scale\(\)](#)

Other bde\_plot: [bde\\_pals](#), [theme\\_bde\(\)](#)

---

theme\_bde

*BdE ggplot2 theme*

---

**Description**

A custom ggplot2 theme based on the publications of BdE.

**Usage**

```
theme_bde(...)
```

**Arguments**

`...` Ignored.

**Value**

A [ggplot2::theme\(\)](#).

**See Also**

[ggplot2::theme\(\)](#)

Other bde\_plot: [bde\\_pals](#), [scales\\_bde](#)

**Examples**

```
library(tidyverse)

series_TC <- bde_series_full_load("TC_1_1.csv")

# If download was OK then plot
if (nrow(series_TC) > 0) {
  series_TC <- series_TC[c(1, 2)]

  series_TC_pivot <- series_TC %>%
    filter(
      Date >= "2020-01-01" & Date <= "2020-12-31",
      !is.na(series_TC[[2]])
    )

  names(series_TC_pivot) <- c("x", "y")

  ggplot(series_TC_pivot, aes(x = x, y = y)) +
    geom_line(size = 0.8, color = bde_vivid_pal()(1)) +
    labs(
      title = "Title",
      subtitle = "Some metric",
      caption = "Bank of Spain"
    ) +
    theme_bde()
}
```

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