# Package 'tidyBdE'

April 1, 2021

**Title** Download Data from Bank of Spain

**Version** 0.0.1.9000

**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)

**Encoding** UTF-8

**LazyData** true

**BugReports** https://github.com/dieghernan/tidyBdE/issues

**URL** https://dieghernan.github.io/tidyBdE/, https://github.com/dieghernan/tidyBdE

**Roxygen** list(markdown = TRUE)

**RoxygenNote** 7.1.1

**Depends** R (>= 3.6.0)

**Imports** tibble (>= 3.0.0),
readr (>= 1.0.0),
dplyr (>= 0.7.0),
ggplot2 (>= 3.3.0),
scales (>= 1.1.0)

**Suggests** tidyverse (>= 1.3.0),
tinytest,
knitr,
rmarkdown

**VignetteBuilder** knitr

## R topics documented:

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bde_catalog_load *Load BdE catalogs*

---

### 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 Details |
| parse_dates | Logical. If TRUE the dates would be parsed using `bde_parse_dates()`. |
| cache_dir | A path to a cache directory. The directory can also be set via options with `options(bde_cache_dir = "path/to/dir")`. |
| update_cache | Logical. If TRUE the requested file would be updated on the `cache_dir`. |
| verbose | Logical, 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.

If the requested catalog is not cached `bde_catalog_update()` is invoked.

## Value

A tibble

## Source

[Time-series bulk data download](#)

## See Also

[bde_catalog_update()](#)

## Examples

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

---

bde_catalog_search           *Update BdE catalogs*

---

## Description

Search for keywords on the time-series catalogs.

## Usage

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

## Arguments

pattern          regex pattern to search See Details and Examples.

...              Arguments passed on to [bde_catalog_load](#)

catalog A single value indicating the catalogs to be updated or "ALL" as a
shorthand. See Details

parse_dates Logical. If TRUE the dates would be parsed using [bde_parse_dates()](#).

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 options(bde_cache_dir = "path/to/dir").

verbose Logical, 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 [grep()](#) 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(), grep()

**Examples**

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

PIB <- bde_catalog_search("PIB", catalog = "IE")

names(PIB)[c(2, 3, 5)]

PIB[c(2, 3, 5)]

# More complex - Single
FRA_PIB <- bde_catalog_search("Francia(.*)PIB", catalog = "IE")

FRA_PIB[c(2, 3, 5)]

# Even more complex - Double
FRA_ITA_DEU_PIB <-
  bde_catalog_search("Francia(.*)PIB|Italia(.*)PIB|Alemania(.*)PIB",
    catalog = "IE"
  )

FRA_ITA_DEU_PIB[c(2, 3, 5)]

# Search an alias: Exact match
bde_catalog_search("^IE_1_1.1$")[c(2, 3, 5)]

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

bde_catalog_search("^3779313$")[c(2, 3, 5)]
```

---

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 short-hand. See Details |
| cache_dir | A path to a cache directory. The directory can also be set via options with options(bde_cache_dir = "path/to/dir"). |
| verbose | Logical, 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**

Silent. Downloads the catalog file(s) to the local machine.

**Source**

[Time-series bulk data download](#)

**Examples**

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

---

bde_ind_gdp_var          *Relevant Indicators of Spain*

---

**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", ...)
```

## 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 bde_series_load

                parse_dates Logical. If TRUE the dates would be parsed using bde_parse_dates().

                parse_numeric Logical. If TRUE the columns would be parsed to double (nu-
                    meric) values. See Note.

                cache_dir A path to a cache directory. The directory can also be set via options
                    with options(bde_cache_dir = "path/to/dir").

                update_cache Logical. If TRUE the requested file would be updated on the
                    cache_dir.

                verbose Logical, display information useful for debugging.

                extract_metadata Logical TRUE/FALSE. On TRUE the output is the meta-
                    data of the requested series.

## Details

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

## See Also

bde_series_load(), bde_catalog_search()

## Examples

```
bde_ind_euribor_12m_monthly()
```

---

bde_parse_dates          *Parse dates*

---

## Description

Tries to parse strings representing dates using as.Date()

## Usage

```
bde_parse_dates(dates_to_parse)
```

## Arguments

dates_to_parse  Dates to parse

## Value

A class "Date" object.

**Note**

This function is taylored 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.

**See Also**

as.Date()

**Examples**

```
# Formats parsed
would_parse <- c(
  "02 FEB2019", "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.

**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. 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.

**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 bde_catalog_load(). |
| parse_dates | Logical. If TRUE the dates would be parsed using bde_parse_dates(). |
| parse_numeric | Logical. If TRUE the columns would be parsed to double (numeric) values. See Note. |
| cache_dir | A path to a cache directory. The directory can also be set via options with options(bde_cache_dir = "path/to/dir"). |
| update_cache | Logical. If TRUE the requested file would be updated on the cache_dir. |
| verbose | Logical, display information useful for debugging. |
| extract_metadata | |
| | Logical TRUE/FALSE. On TRUE the output is the metadata of the requested 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 behaviour with parse_numeric = FALSE

## See Also

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            *Load a single BdE time-series.*

---

### Description

Load a single time-series provided by BdE.

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

| | |
|---|---|
| series_code | a numeric value or vector with time-series code(s), as defined in the field Número secuencial of the corresponding series. See bde_catalog_load(). |
| 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. |
| parse_dates | Logical. If TRUE the dates would be parsed using bde_parse_dates(). |
| parse_numeric | Logical. If TRUE the columns would be parsed to double (numeric) values. See Note. |
| cache_dir | A path to a cache directory. The directory can also be set via options with options(bde_cache_dir = "path/to/dir"). |
| update_cache | Logical. If TRUE the requested file would be updated on the cache_dir. |
| verbose | Logical, display information useful for debugging. |
| extract_metadata | Logical TRUE/FALSE. On TRUE the output is the metadata of the requested series. |

### 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 behaviour with `parse_numeric = FALSE`

**See Also**

bde_series_full_load(), bde_catalog_load(), bde_catalog_search()

**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
)
```

---

bde_vivid_pal                    *BdE colour palettes*

---

**Description**

Custom `ggplot2` theme based on the publications of BdE.

**Usage**

```
bde_vivid_pal(...)

bde_scale_colour_vivid(...)

bde_scale_color_vivid(...)

bde_scale_fill_vivid(...)
```

**Arguments**

`...`                    Further arguments of the functions.

**See Also**

theme_bde()

## Examples

```
scales::show_col(bde_vivid_pal()(6))
```

---

theme_bde *BdE* ggplot2 *theme*

---

## Description

A custom `ggplot2` theme based on the publications of BdE.

## Usage

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

## Arguments

... Ignored.

## See Also

[ggplot2::theme()](ggplot2::theme())

## Examples

```
library(tidyverse)

series_TC <- bde_series_full_load("TC_1_1.csv")

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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