

CU53__MODEL_DEVELOPMENT__03__TS

June 13, 2023

#

CU53__impacto de las políticas de inversión en sanidad, infraestructuras y promoción turística en el SPI

1 IV. Model development

En este anexo se incluye el código utilizado durante el desarrollo de los modelos incluidos en el caso de uso.

1.1 Modelo ARIMA

```
[1]: Sys.setlocale(category = "LC_ALL", locale = "es_ES.UTF-8")
```

```
'es_ES.UTF-8/es_ES.UTF-8/es_ES.UTF-8/C/es_ES.UTF-8/C'
```

1.1.1 Paquetes

```
[2]: library(dplyr)
library(tidyr)
library(readr)
library(glmnet)
library(tsibble)
library(fable)
```

Attaching package: 'dplyr'

The following objects are masked from 'package:stats':

filter, lag

The following objects are masked from 'package:base':

intersect, setdiff, setequal, union

Loading required package: Matrix

Attaching package: 'Matrix'

The following objects are masked from 'package:tidyr':

expand, pack, unpack

Loaded glmnet 4.1-6

Attaching package: 'tsibble'

The following objects are masked from 'package:base':

intersect, setdiff, union

Loading required package: fabletools

1.1.2 Datos

```
[3]: inversiones <- read_csv("CU_53_05_05_inversiones_cm.csv")  
  
spi <- read_csv("CU_53_05_02_01_spi.csv")  
spi_meta <- read_csv("CU_53_05_02_02_spi_metadata.csv")
```

Rows: 24 Columns: 3

Column specification

Delimiter: ","

chr (1): grupo

dbl (2): anyo, inversion

Use `spec()` to retrieve the full column specification for this data.

Specify the column types or set `show_col_types = FALSE` to quiet this message.

Rows: 2364 Columns: 81

Column specification

Delimiter: ","

chr (3): country, spicountrycode, status

```
dbl (78): rank_score_spi, spiyear, score_spi, score_bhn, score_fow,  
score_op...
```

Use ``spec()`` to retrieve the full column specification for this data.

Specify the column types or set ``show_col_types = FALSE`` to quiet this message.

```
Rows: 81 Columns: 8
```

Column specification

Delimiter: ","

```
chr (8): id_var, name_var, role, Dimension, Component, Unit of  
measurement, ...
```

Use ``spec()`` to retrieve the full column specification for this data.

Specify the column types or set ``show_col_types = FALSE`` to quiet this message.

1.2 Modelo

```
[4]: x_inv <- inversiones |>  
  group_by(anyo) |>  
  mutate(total_anyo = sum(inversion),  
         porc_inv = round(100*(inversion/total_anyo), 2)) |>  
  ungroup() |>  
  pivot_wider(id_cols = anyo, names_from = "grupo",  
              values_from = "porc_inv") |>  
  rename(spiyear = anyo,  
         inv_inf = INFRAESTRUCTURAS,  
         inv_tur = TURISMO,  
         inv_san = SANIDAD) |>  
  select(-RESTO) |>  
  as.matrix()  
  
## MODELO  
  
modelo <- read_rds("modelo_reg.rds")  
  
## ESTIMACIÓN  
  
## Mostrar en tabla  
spi_madrid <- x_inv |>  
  bind_cols(predict(modelo, x_inv)) |>  
  rename(spi = s0)
```

1.3 Ajuste series

```
[5]: ## SERIE TEMPORAL

spi_ts <- spi_madrid |> as_tsibble(index = spiyear)

modelo_ts <- spi_ts |>
  model(arima = ARIMA(spi))
```

1.3.1 Predicción

```
[6]: prediction <- modelo_ts |> forecast(h = 2)
```

```
[8]: glimpse(prediction)
```

```
Rows: 2
Columns: 4
Key: .model [1]
```