Diverse examples of the custom `sie_function`

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Overview

The aim of this document is to share diverse examples on how to use the custome function `sie_function`, developed to get a quick view of diverse selected SIE series.

For details of the code of this function, look at the Rscript SIE_function.R in the **src** folder of this repository.

SIE's Series Catalogue

This notebook shows diverse examples using different time series published by Banco de Mexico in the SIE, using series as exhange rates, operations and number of ATMs, retail transactions, among other series.

Click here to look for the complete catalogue of the SIE's time series published by Banco de Mexico.

Examples

The time series used in this notebook for examples are:

1. Exchange Rate, of U.S. Dollar, Canadian Dollar, British Pound, Australian Dollar, and Euro to Mexican Pesos, since 2000.
2. Operations in ATMs with Debit and Credit Cards.
3. Number of ATM for the eight most-populated States in Mexico, since 2010.
4. Retail payment systems transactions at ATMs, POS, Checks, and Transfers by Electronic Payments, Internet Banking and Phone, from 2016 to 2019.
5. Consumer Price Index (INPC), main index and subindexes, during Enrique Peña Nieto's Presidency of Mexico (2012-2018).

0. Load libraries and set token

The first step is to use the custome function is load the library, as well to call and set the token.

```
# load libraries
library("siebanxicor")
library("tidyverse")
```

```
## -- Attaching packages --------------------------- tidyverse 1.3.0 --

## v ggplot2 3.3.2     v purrr   0.3.4
## v tibble  3.0.3     v dplyr   1.0.2
## v tidyr   1.1.2     v stringr 1.4.0
## v readr   1.4.0     v forcats 0.5.0
```

```
## -- Conflicts ------------------------------- tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

```
# bring the token
token_file <- read.csv("../token/SIE_Token.csv", header=FALSE)

# set the token
setToken(token_file$V2)

# call the customed function from the RScript
source("SIE_function.R")
```

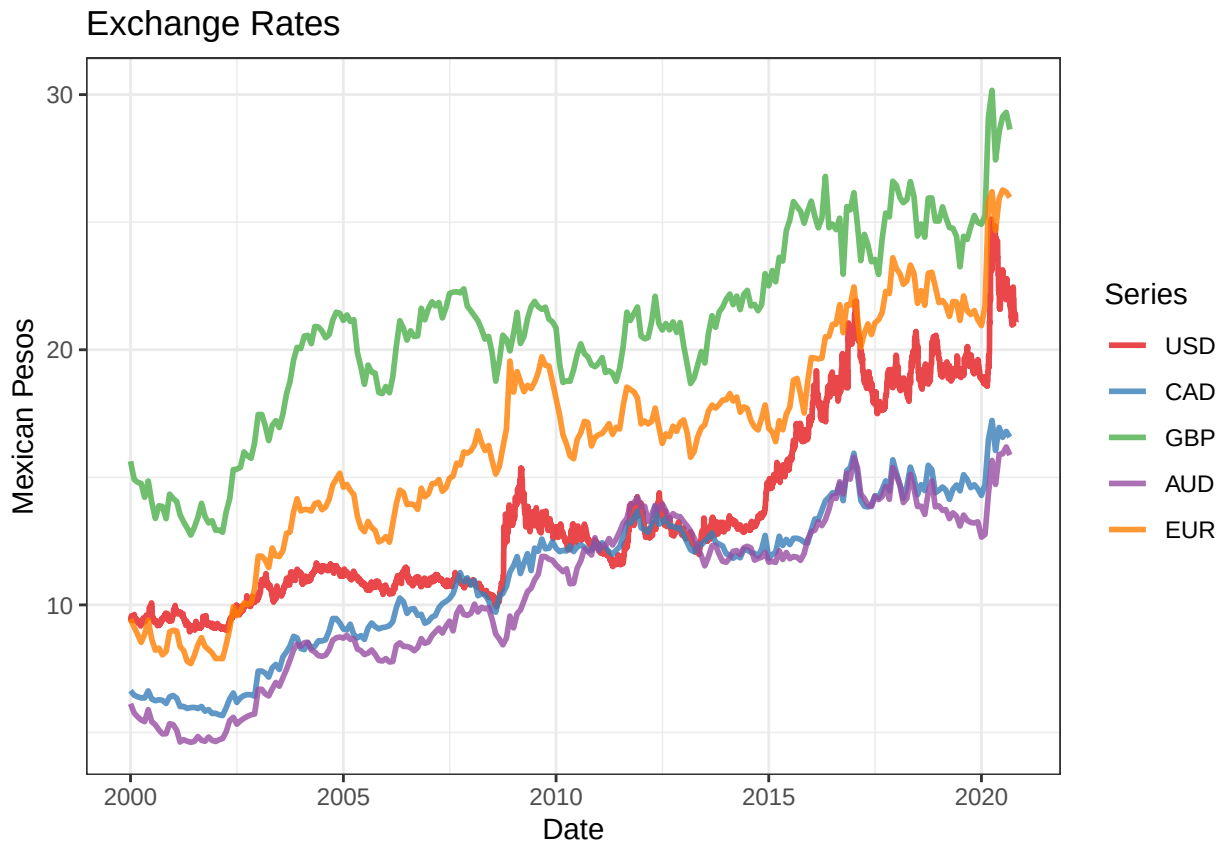
1. Exchange Rate

Exchange rate of U.S. Dollar, Canadian Dollar, British Pound, Australian Dollar, and Euro to Mexican Pesos, since 2000.

```
serie_tc <- c("SF60653", "SF57771", "SF57815", "SF57753",
              "SF57923")
name_tc <- c("USD", "CAD", "GBP", "AUD", "EUR")
title_tc <- "Exchange Rates"
my_start <- '2000-01-01'
my_y <- "Mexican Pesos"
my_x <- "Date"

# run the function
df_tc <- sie_function(serie_tc, name_tc,
            title_tc, route="../img/",
            y_lab = my_y, x_lab = my_x,
            startDate=my_start)
```

```
## Saving 6.5 x 4.5 in image
```




```
##   idSerie
## 1 SF57923
## 2 SF57771
## 3 SF60653
## 4 SF57815
## 5 SF57753
##
## 1     Foreign Exchange Rates for Fiscal Valuation Purposes used by Banco de México EUR E. Monetary Un
## 2                 Foreign Exchange Rates for Fiscal Valuation Purposes used by Banco de México CAD Ca
## 3                     Exchange rate pesos per US dollar Used to settle liabilities denominated in for
## 4 Foreign Exchange Rates for Fiscal Valuation Purposes used by Banco de México STG United Kingdom (Po
## 5              Foreign Exchange Rates for Fiscal Valuation Purposes used by Banco de México AUD Austr
##    startDate    endDate frequency      dataType                 unit
## 1 2000-01-01 2020-09-01   Monthly Exchange Rate                Pesos
## 2 2000-01-01 2020-09-01   Monthly Exchange Rate                Pesos
## 3 1991-11-14 2020-10-27     Daily Exchange Rate Pesos per US Dollars
## 4 2000-01-01 2020-09-01   Monthly Exchange Rate                Pesos
## 5 2000-01-01 2020-09-01   Monthly Exchange Rate                Pesos
```

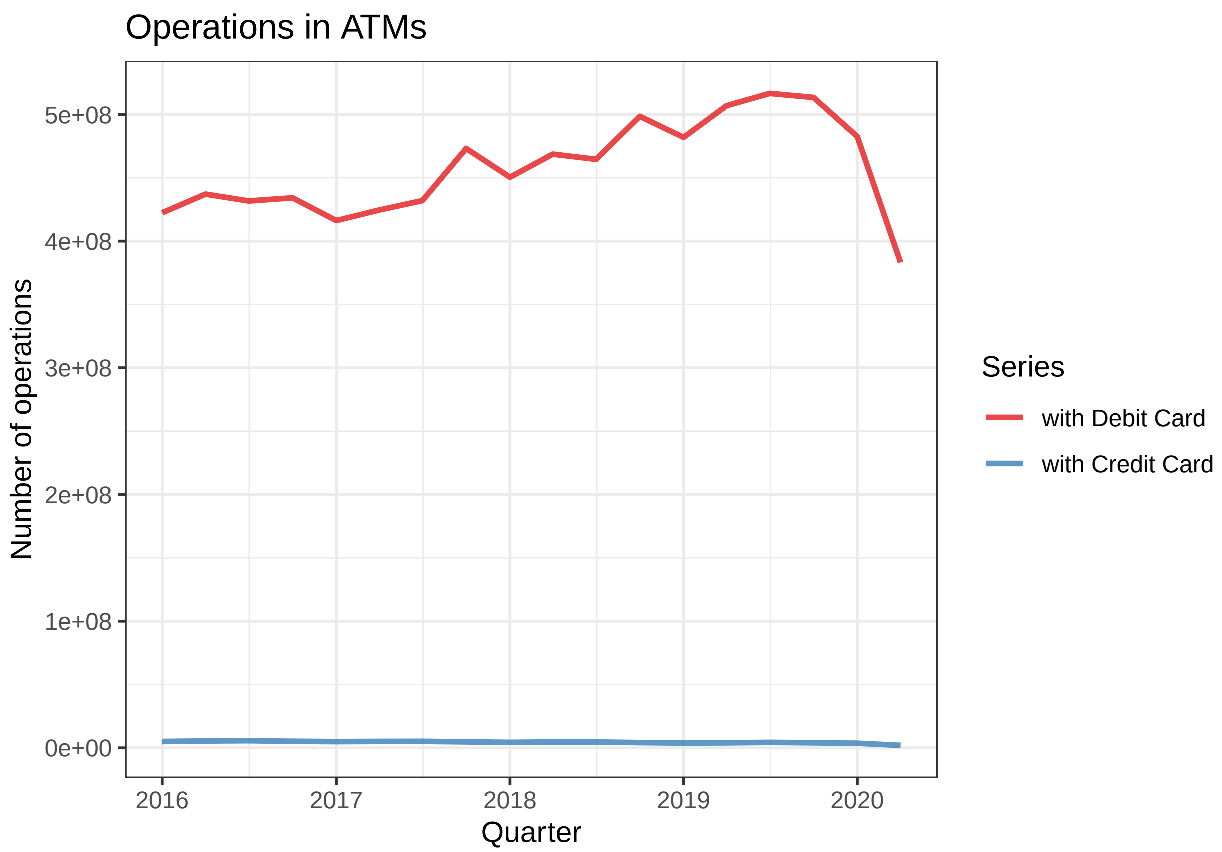
2. Operations in ATMs

Series with the number of operations in ATMs with Debit and Credit Cards.

```
serie_atm <- c("SF62270", "SF62271")
name_atm <- c("with Debit Card", "with Credit Card")
title_atm <- "Operations in ATMs"
my_y <- "Number of operations"
my_x <- "Quarter"

# run the function
df_atm <- sie_function(serie_atm, name_atm,
            title_atm, route="../img/",
            y_lab = my_y, x_lab = my_x)
```

```
## Saving 6.5 x 4.5 in image
```




```
##   idSerie
## 1 SF62271
## 2 SF62270
##                                                                                              ti
## 1 Retail payment systems Transactions in ATMs Total transactions with credit cards Number of operati
## 2  Retail payment systems Transactions in ATMs Total transactions with debit cards Number of operati
##    startDate    endDate frequency dataType          unit
## 1 2002-01-01 2020-04-01 Quarterly   Volume Without units
## 2 2002-01-01 2020-04-01 Quarterly   Volume Without units
```

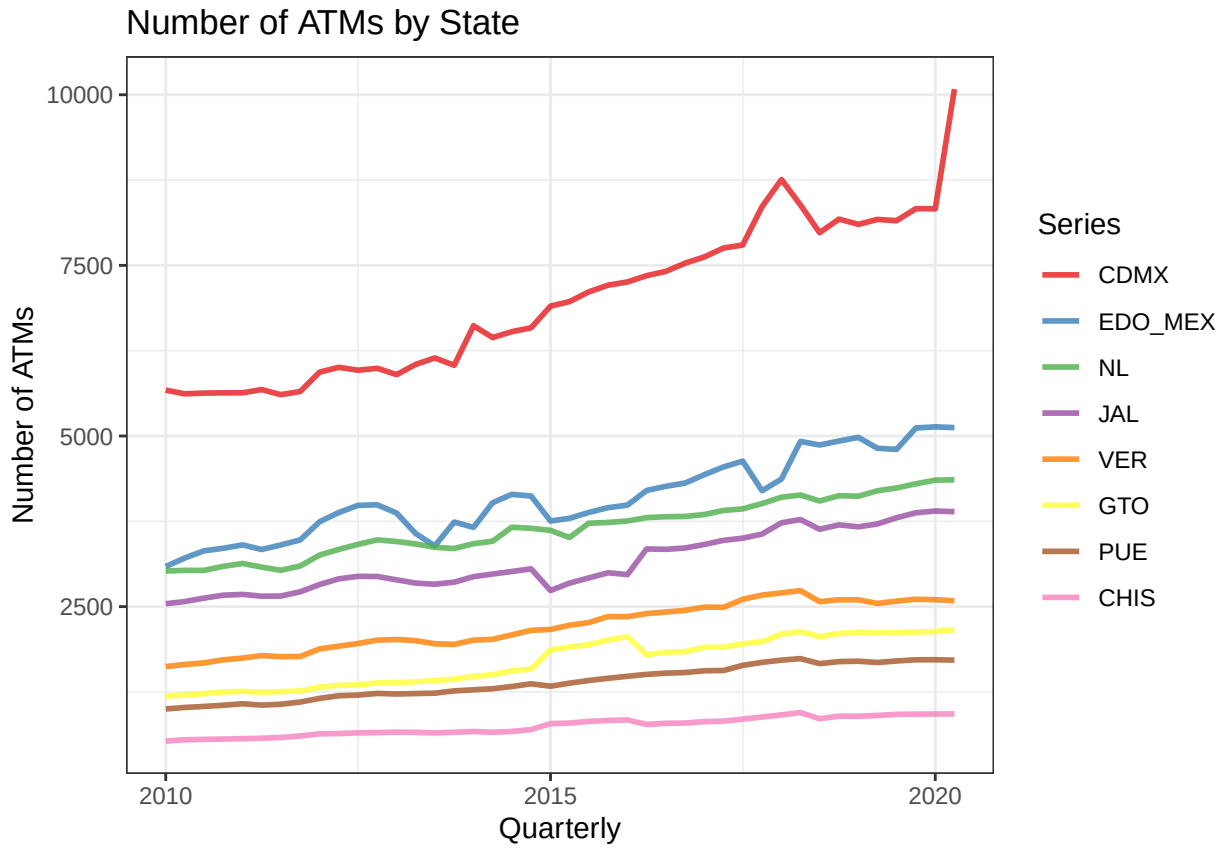
3. Number of ATM for the most populated States

Quarterly time series of the number of ATMs by State, for the 8 states more populated in Mexico, since 2010.

```
serie_state <- c("SF42310", "SF42338", "SF42346", "SF42336",
                 "SF42368", "SF42330", "SF42350", "SF42324")
name_state <- c("CDMX", "EDO_MEX", "NL", "JAL", "VER",
                "GTO", "PUE", "CHIS")
title_state <- "Number of ATMs by State"
my_start <- '2010-01-01'
my_y <- "Number of ATMs"
my_x <- "Quarterly"

# run the function
df_state <- sie_function(serie_state, name_state,
            title_state, route="../img/",
            y_lab = my_y, x_lab = my_x,
            startDate=my_start)
```

```
## Saving 6.5 x 4.5 in image
```




```
##   idSerie
## 1 SF42346
## 2 SF42350
```

```
## 3 SF42338
## 4 SF42310
## 5 SF42336
## 6 SF42324
## 7 SF42368
## 8 SF42330
##                                                                  title
## 1       Retail payment systems Number of ATMs by State Total in Nuevo León
## 2           Retail payment systems Number of ATMs by State Total in Puebla
## 3 Retail payment systems Number of ATMs by State Total in Estado de México
## 4 Retail payment systems Number of ATMs by State Total in Distrito Federal
## 5          Retail payment systems Number of ATMs by State Total in Jalisco
## 6          Retail payment systems Number of ATMs by State Total in Chiapas
## 7         Retail payment systems Number of ATMs by State Total in Veracruz
## 8       Retail payment systems Number of ATMs by State Total in Guanajuato
##    startDate    endDate frequency             dataType          unit
## 1 2002-01-01 2020-04-01 Quarterly ciphers without type Without units
## 2 2002-01-01 2020-04-01 Quarterly ciphers without type Without units
## 3 2002-01-01 2020-04-01 Quarterly ciphers without type Without units
## 4 2002-01-01 2020-04-01 Quarterly ciphers without type Without units
## 5 2002-01-01 2020-04-01 Quarterly ciphers without type Without units
## 6 2002-01-01 2020-04-01 Quarterly ciphers without type Without units
## 7 2002-01-01 2020-04-01 Quarterly ciphers without type Without units
## 8 2002-01-01 2020-04-01 Quarterly ciphers without type Without units
```

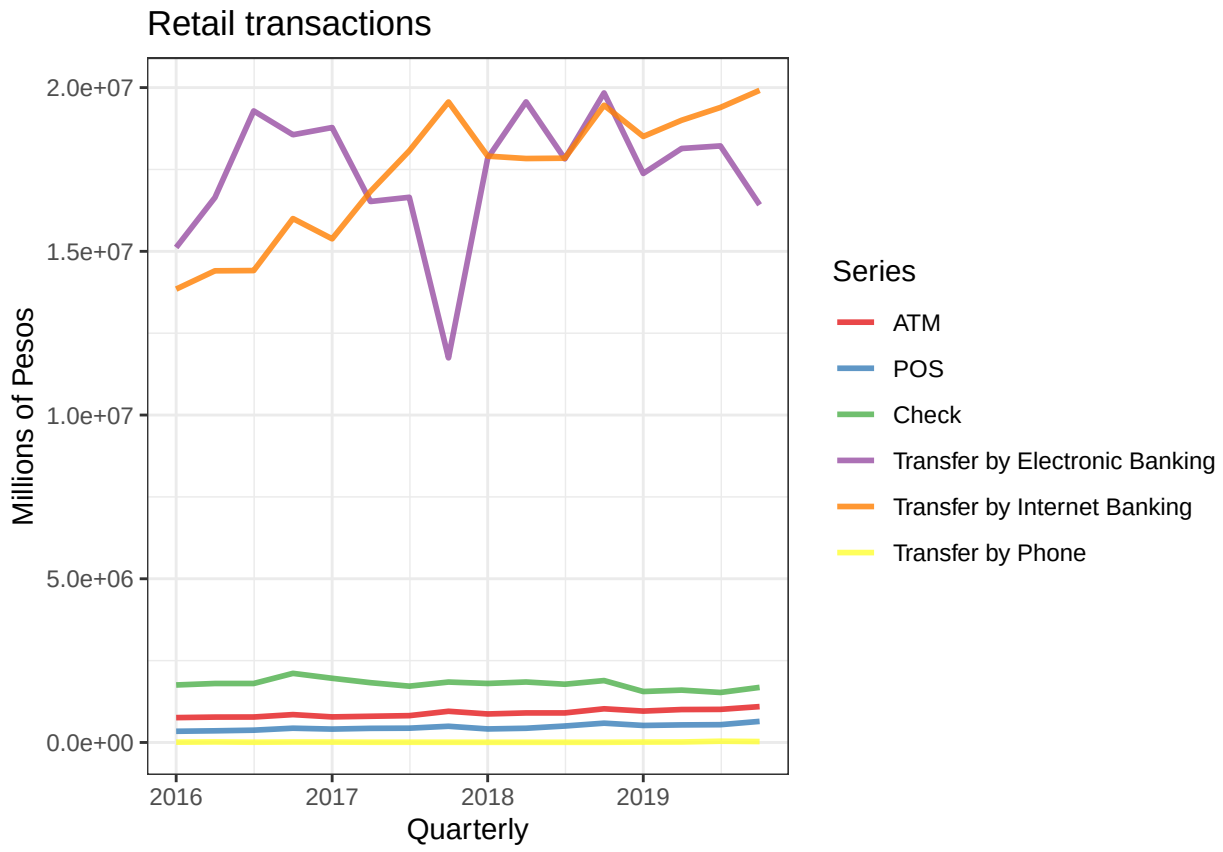
4. Retail payment systems transactions

Information from retail payments at ATMs, Points of Sales (POS), Checks, and Transfers by Electronic Payments, Internet Banking and Phone, from 2016 to 2019.

```
serie_trans <- c("SF62275", "SF62278", "SF61610", "SF60841",
                 "SF60842", "SF60843")
name_trans <- c("ATM", "POS", "Check",
                "Transfer by Electronic Banking",
                "Transfer by Internet Banking",
                "Transfer by Phone")
title_trans <- "Retail transactions"
my_y <- "Millions of Pesos"
my_x <- "Quarterly"
my_start <- '2016-01-01'
my_end <- '2019-12-31'

# run the function
df_trans <- sie_function(serie_trans, name_trans,
            title_trans, route="../img/",
            y_lab = my_y, x_lab = my_x,
            startDate=my_start, endDate=my_end)
```

```
## Saving 6.5 x 4.5 in image
```




```
##   idSerie                                                              title
## 1 SF62275 Retail payment systems Transactions in ATMs Total transactions Amount
## 2 SF61610          Retail payment systems Total checks in local currency Amount
## 3 SF62278    Retail payment systems Operations in POS Total transactions Amount
## 4 SF60841  Retail payment systems Operations by electronic banking Total Amount
## 5 SF60843               Retail payment systems Operations by phone Total Amount
## 6 SF60842    Retail payment systems Operations by Internet banking Total Amount
##    startDate    endDate frequency          dataType              unit
## 1 2002-01-01 2020-04-01 Quarterly Accumulated flows Millions of Pesos
## 2 2002-01-01 2020-04-01 Quarterly Accumulated flows Millions of Pesos
## 3 2002-01-01 2020-04-01 Quarterly Accumulated flows Millions of Pesos
## 4 2002-01-01 2020-04-01 Quarterly Accumulated flows Millions of Pesos
## 5 2002-01-01 2020-04-01 Quarterly Accumulated flows Millions of Pesos
## 6 2002-01-01 2020-04-01 Quarterly Accumulated flows Millions of Pesos
```

5. Consumer Price Index (INPC)

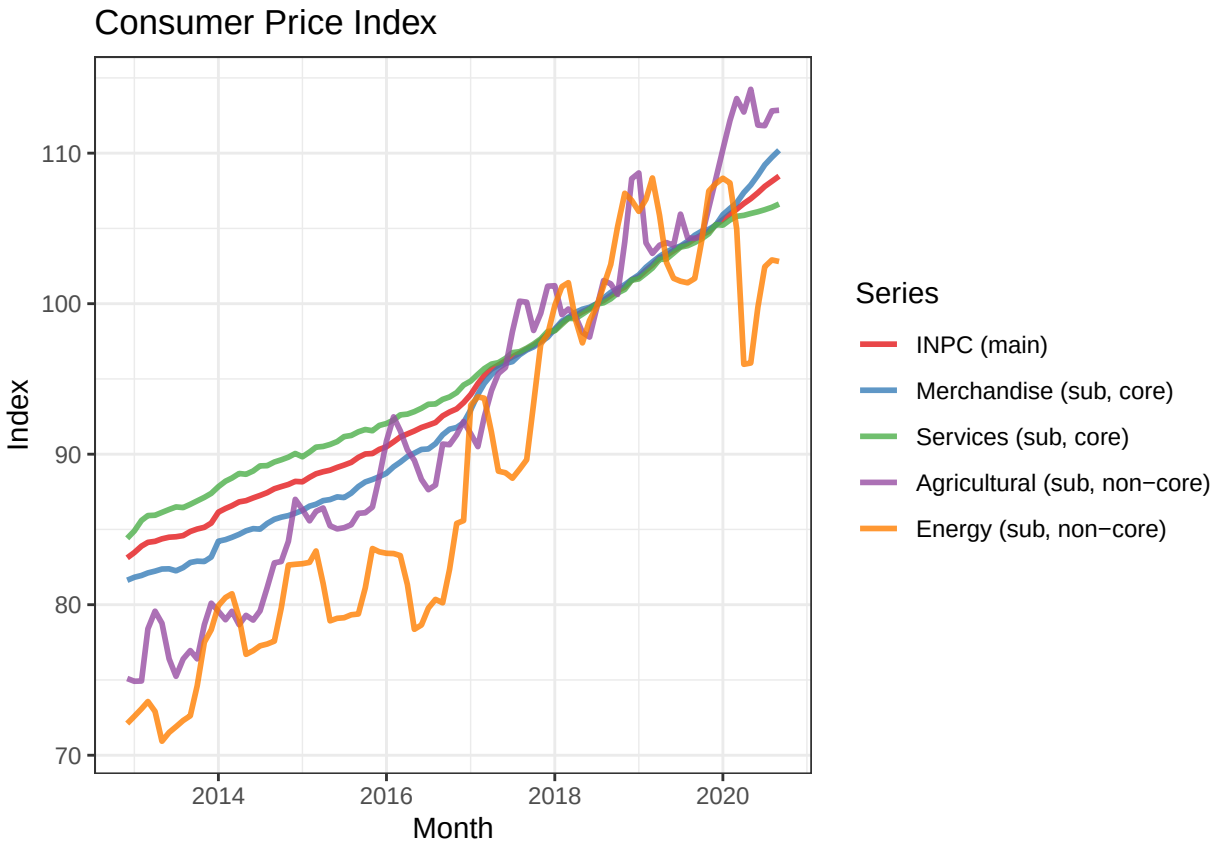
Main time series of the Consumer Price Index (INPC for it's acronym in spanish), and their core and non-core subindexes. Time window of Enrique Peña Nieto's Presidency of Mexico (December 1, 2012 – November 30, 2018).

```
serie_inpc <- c("SP74625", "SP74626", "SP74628", "SP56337",
                "SP74631")
name_inpc <- c("INPC (main)", "Merchandise (sub, core)",
               "Services (sub, core)",
```

```
               "Agricultural (sub, non-core)",
               "Energy (sub, non-core)")
title_inpc <- "Consumer Price Index"
my_y <- "Index"
my_x <- "Month"
my_start <- '2012-12-01'
my_end <- '2018-11-30'

# run the function
df_inpc <- sie_function(serie_inpc, name_inpc,
            title_inpc, route="../img/",
            y_lab = my_y, x_lab = my_x,
            startDate=my_start)
```

```
## Saving 6.5 x 4.5 in image
```




```
##   idSerie
## 1 SP74625
## 2 SP74631
## 3 SP74628
## 4 SP74626
## 5 SP56337
##
## 1                                    Core and complementary subindexes Consumer price index
```

```
## 2 Core and complementary subindexes Consumer price index (INPC) Non-Core Energy and Prices Approved
## 3                                     Core and complementary subindexes Consumer price index (INPC)
## 4                                  Core and complementary subindexes Consumer price index (INPC) Cor
## 5                               Core and complementary subindexes Consumer price index (INPC) Non-Core
##    startDate    endDate frequency dataType          unit
## 1 1982-01-01 2020-09-01   Monthly  Indexes Without units
## 2 1982-01-01 2020-09-01   Monthly  Indexes Without units
## 3 1982-01-01 2020-09-01   Monthly  Indexes Without units
## 4 1982-01-01 2020-09-01   Monthly  Indexes Without units
## 5 1969-01-01 2020-09-01   Monthly  Indexes Without units
```